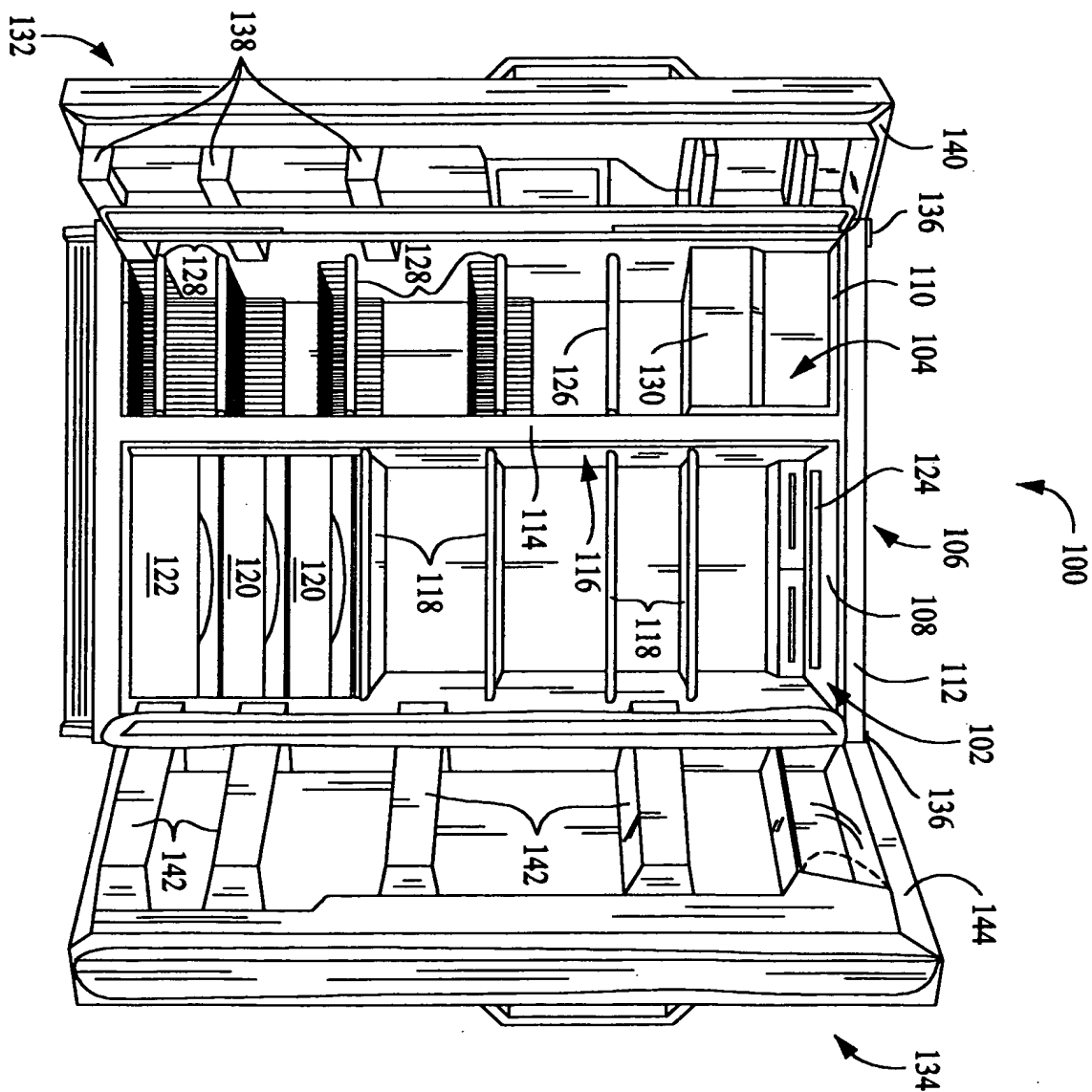




Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

1/61

FIG. 1





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

2/61

102

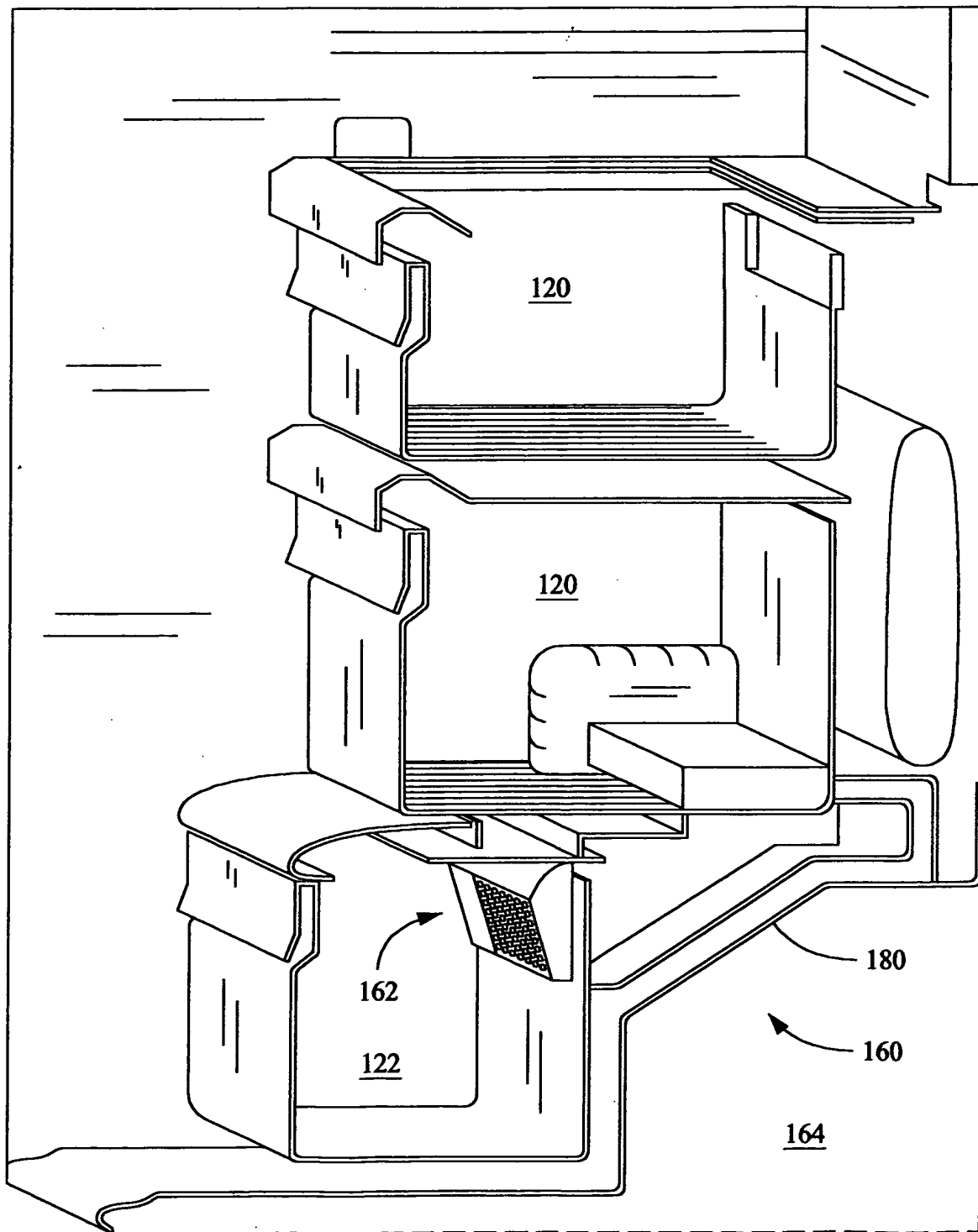


FIG. 2



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

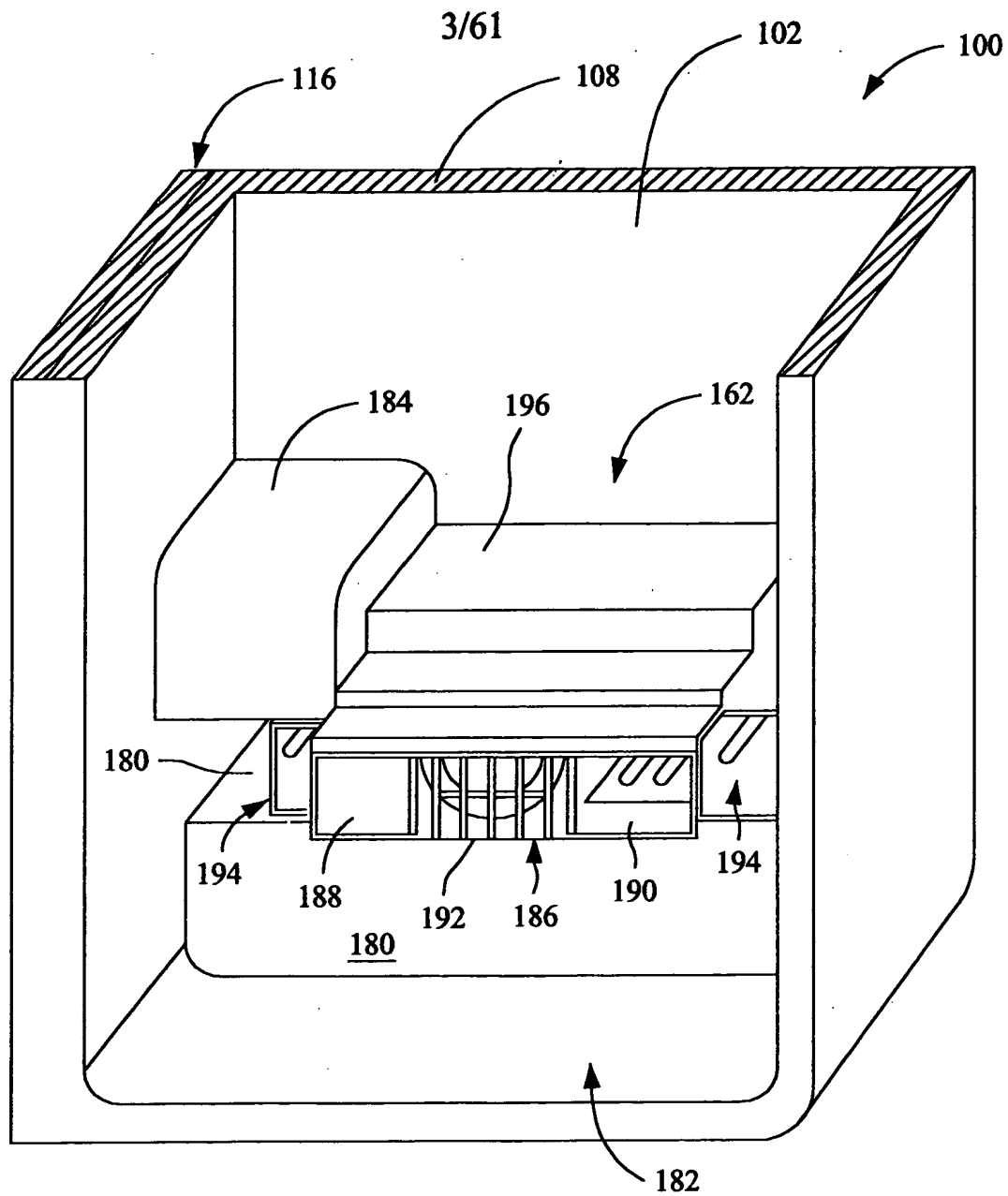


FIG. 3

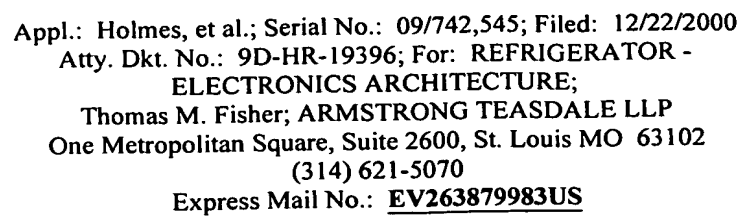


FIG. 4



5/61

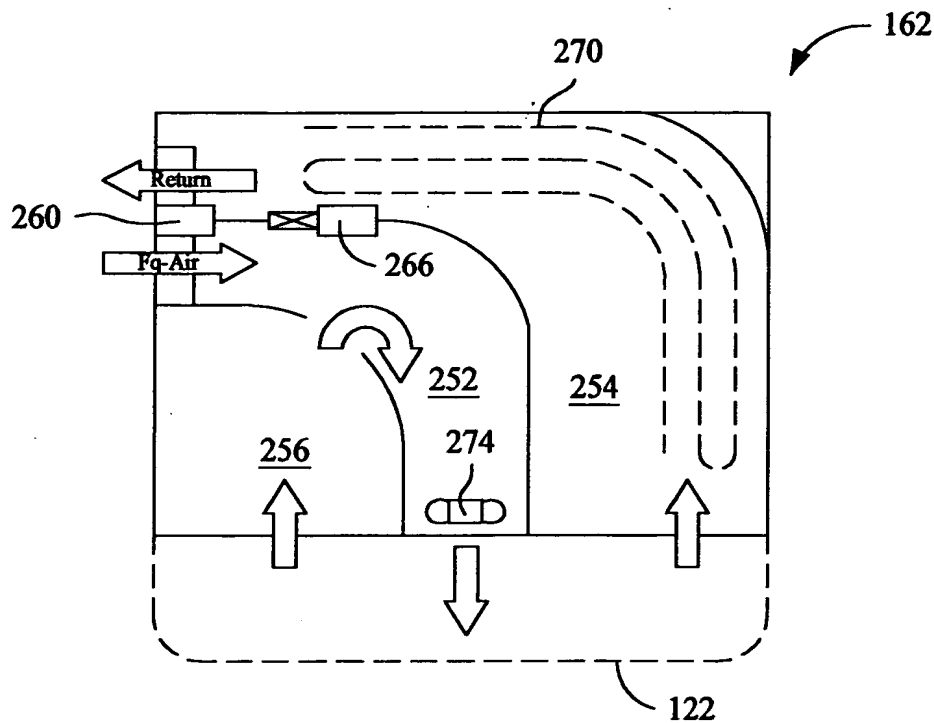


FIG. 5

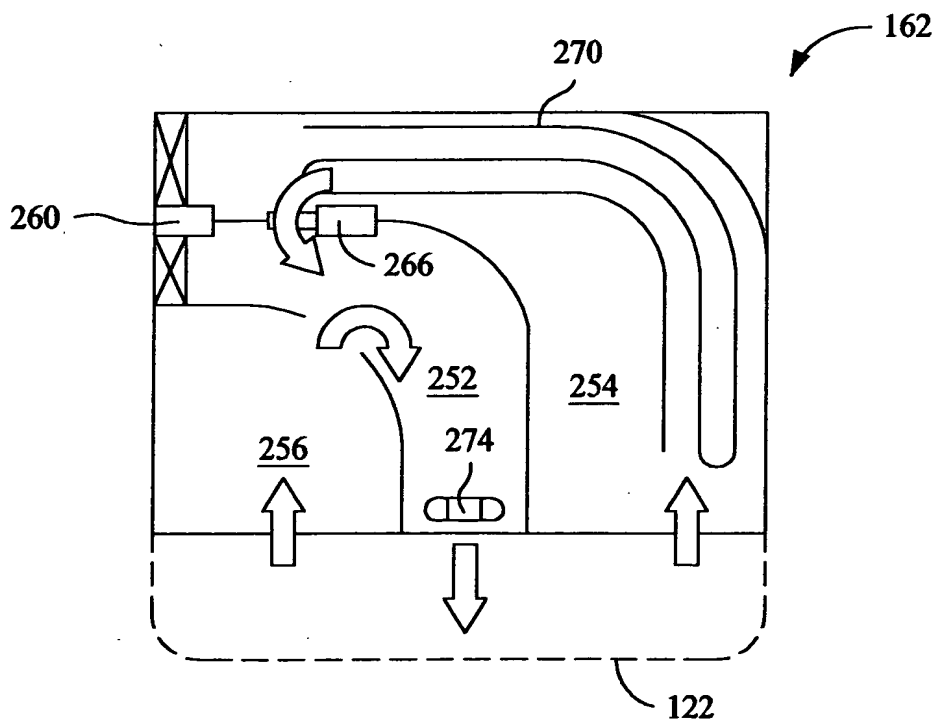


FIG. 6



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

6/61

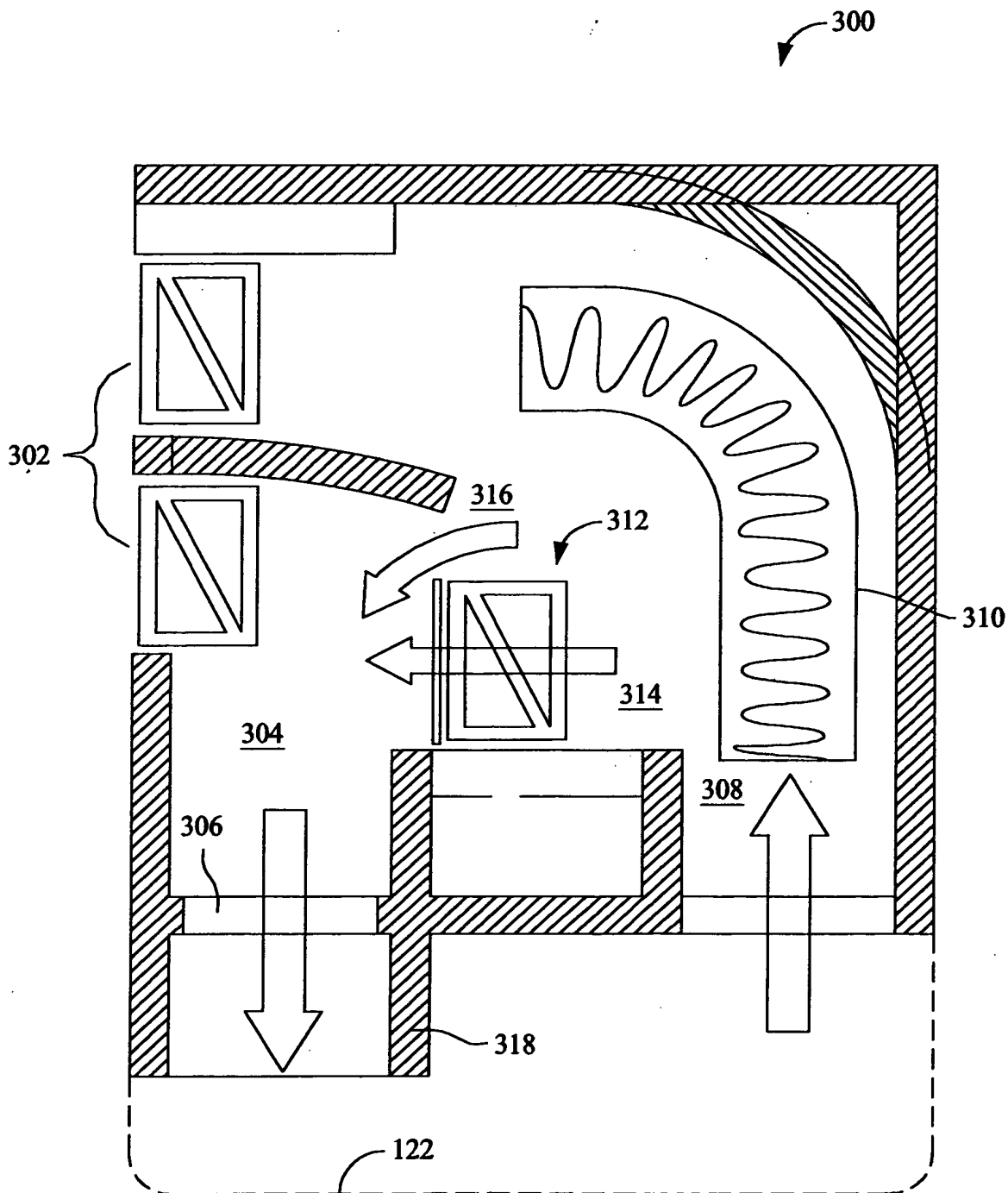


FIG. 7

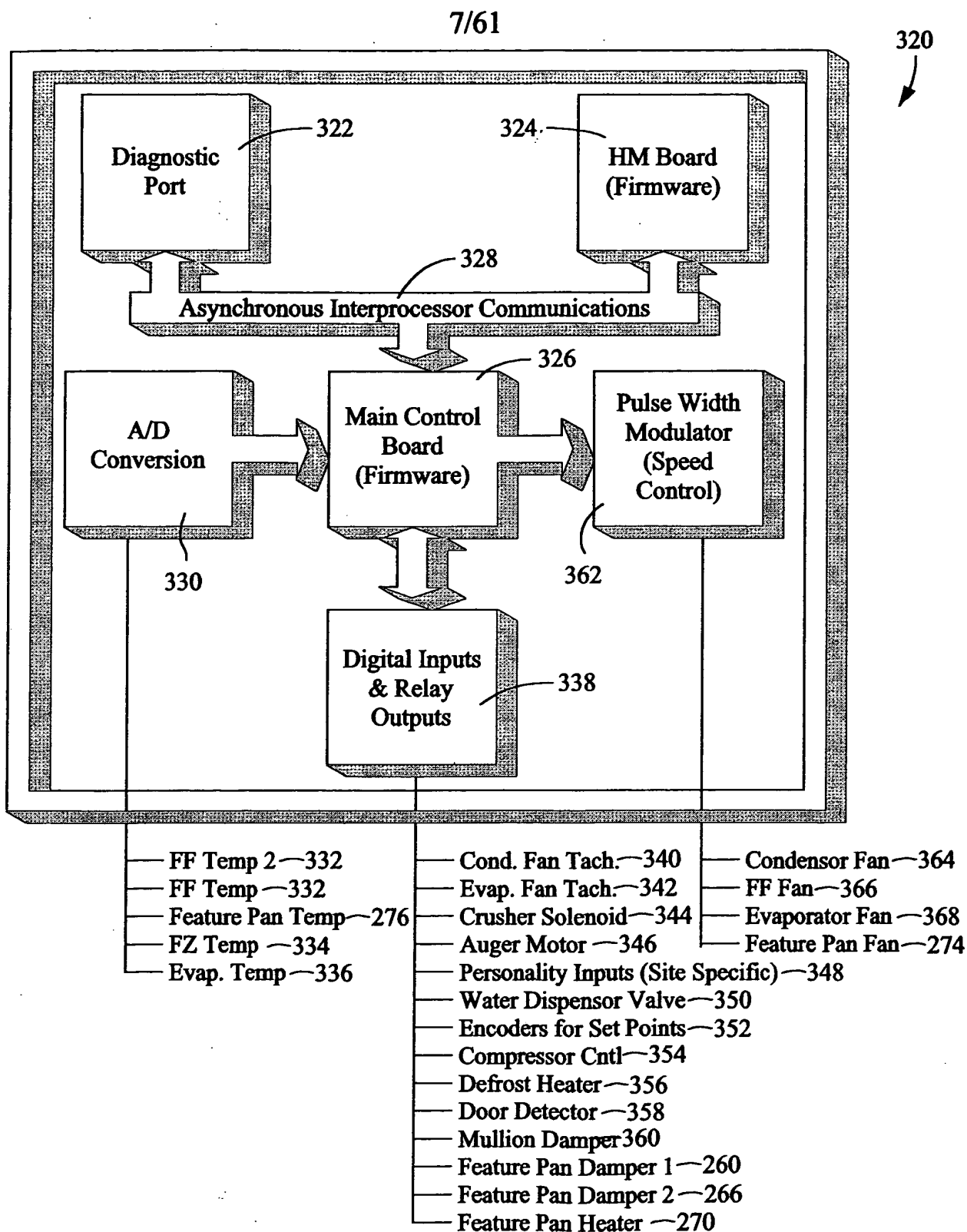


FIG. 8

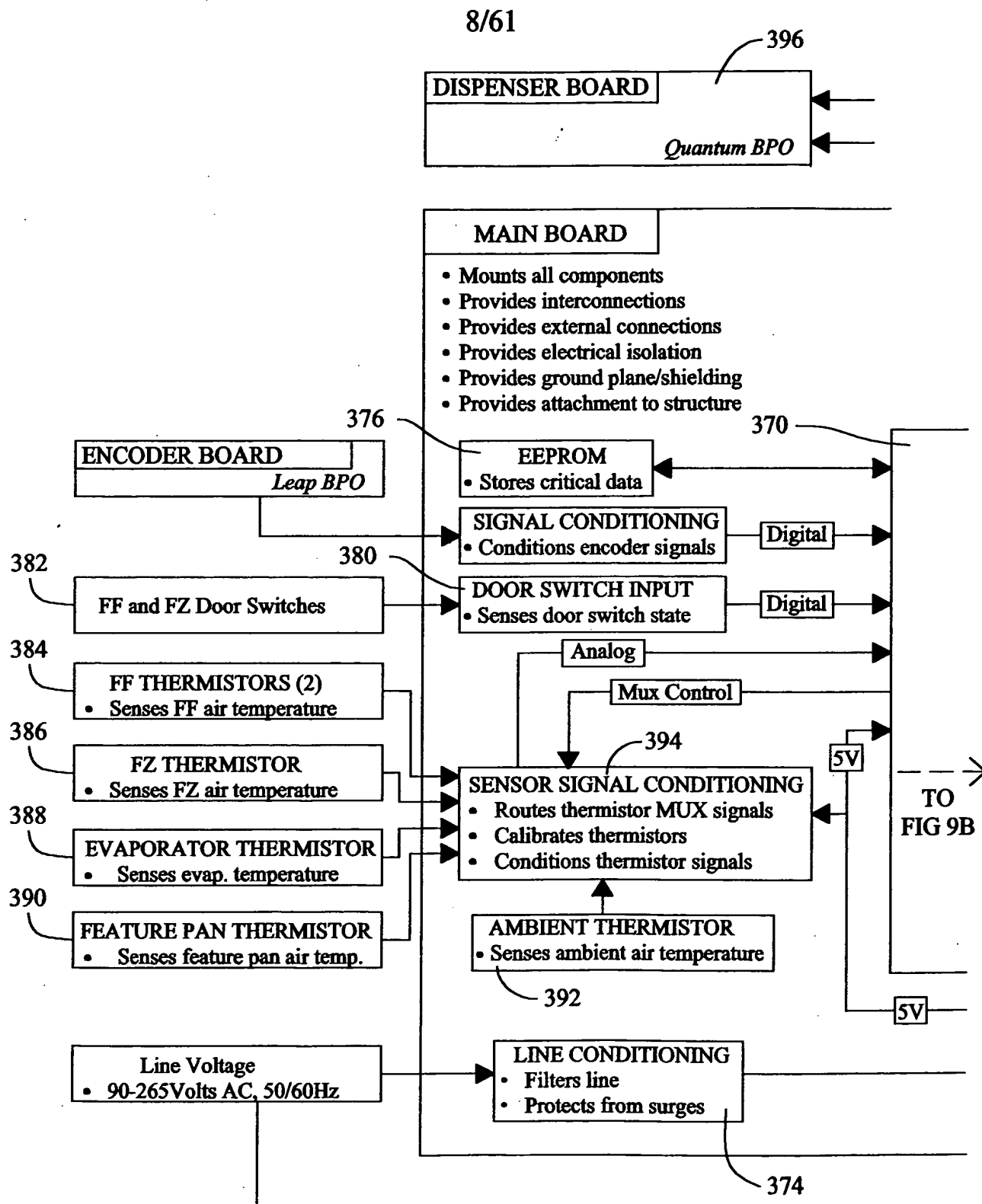
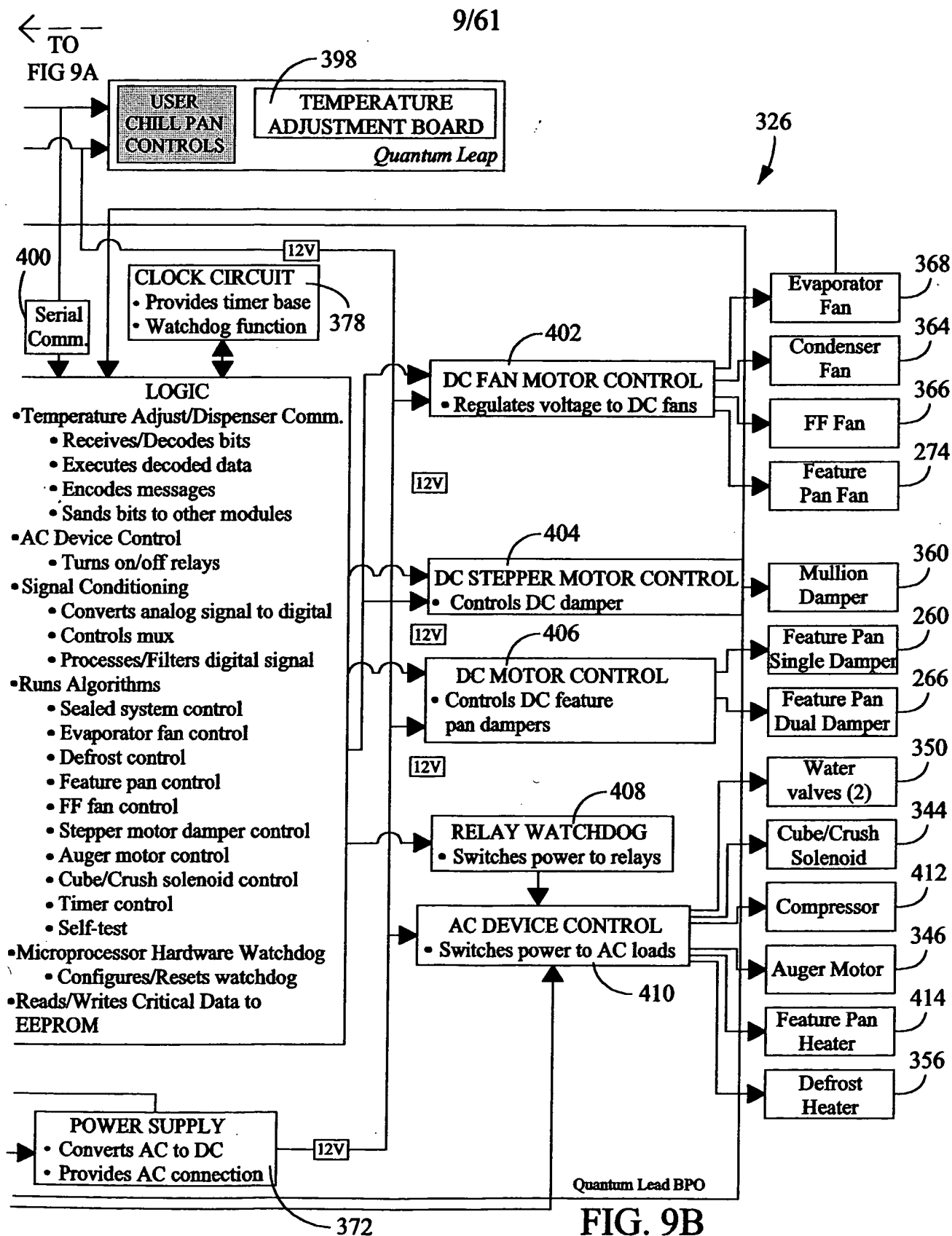


FIG. 9A





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

10/61

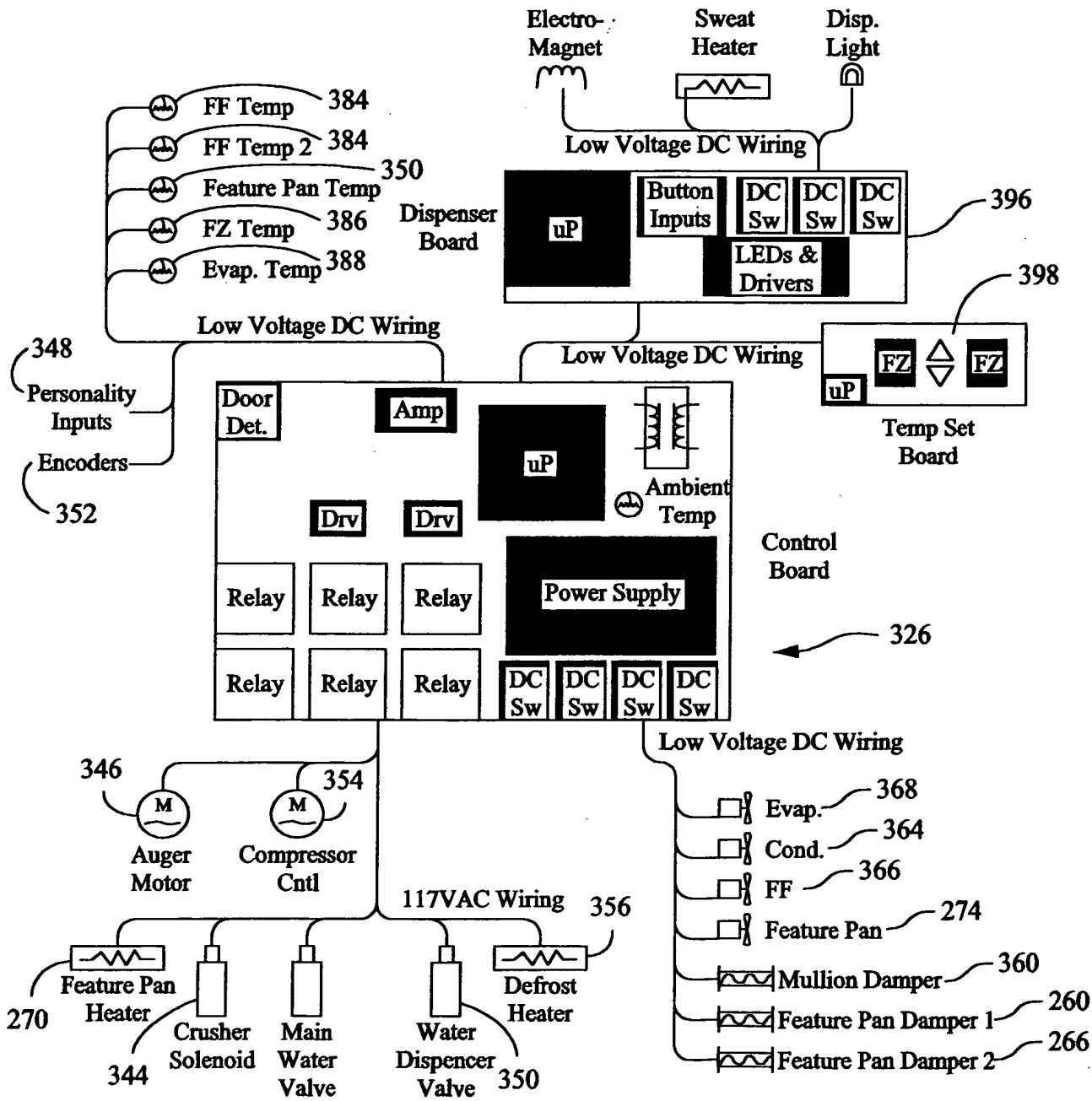


FIG. 10



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

11/61

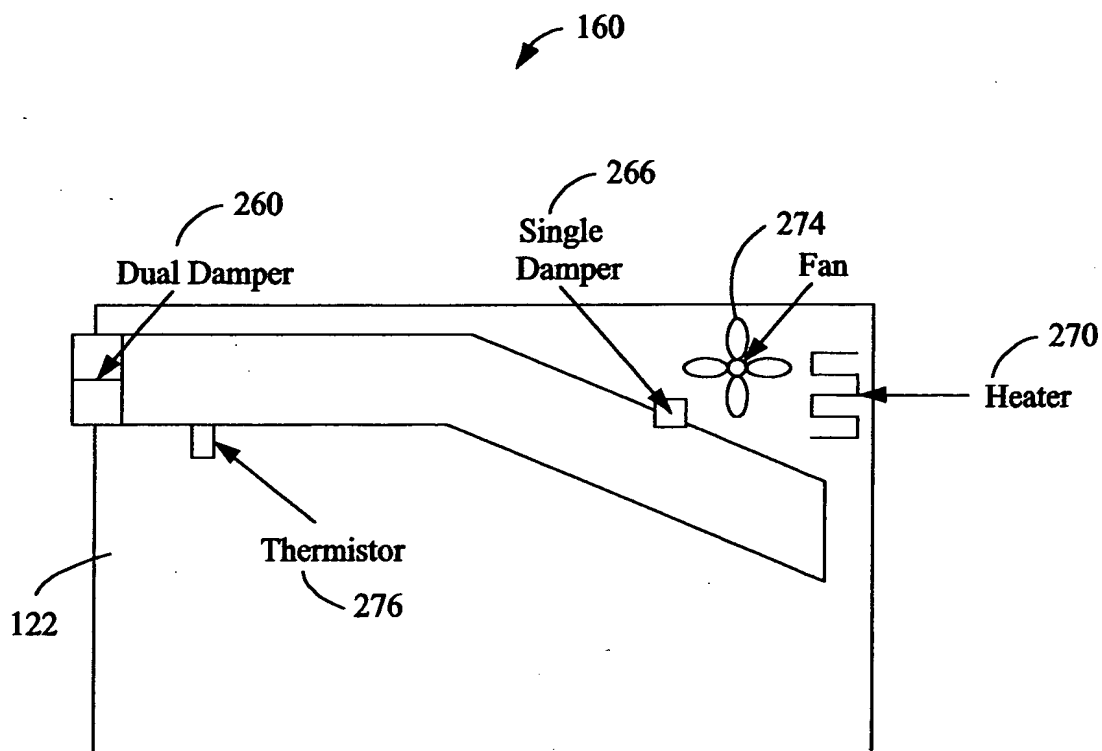


FIG. 11



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

12/61

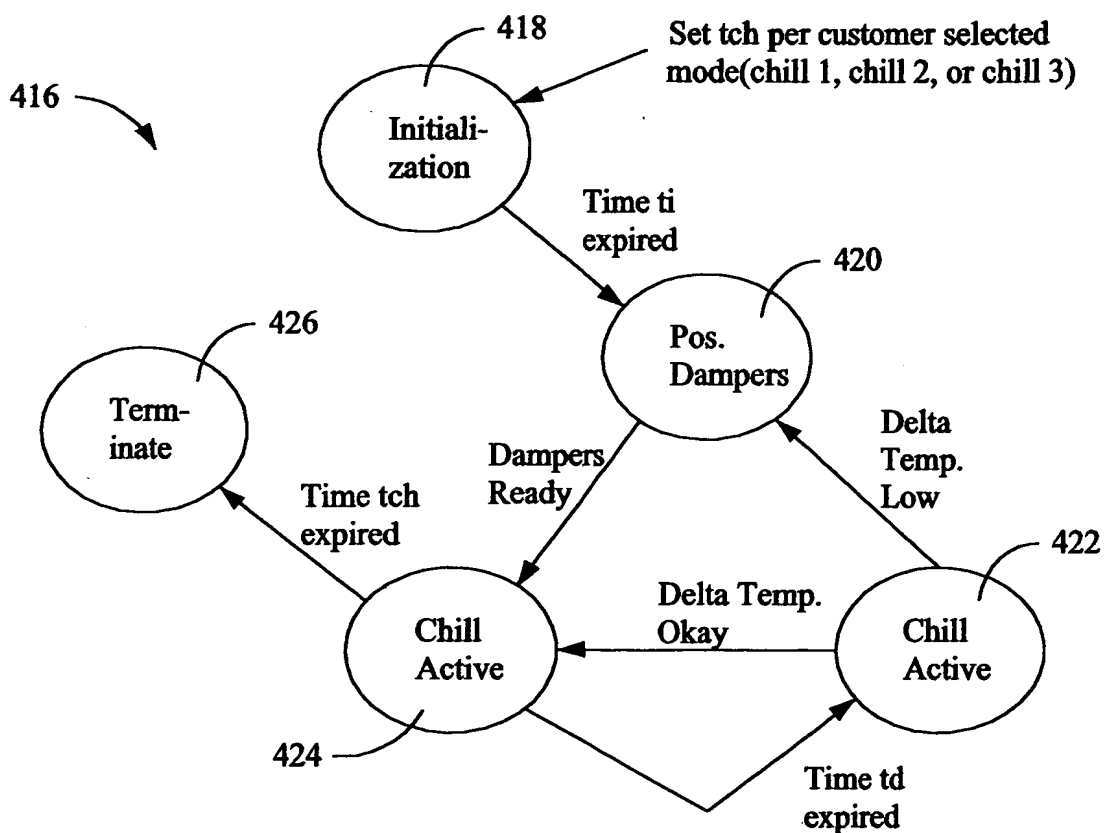
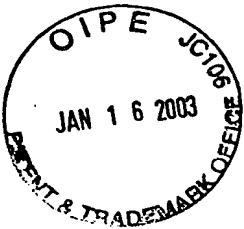
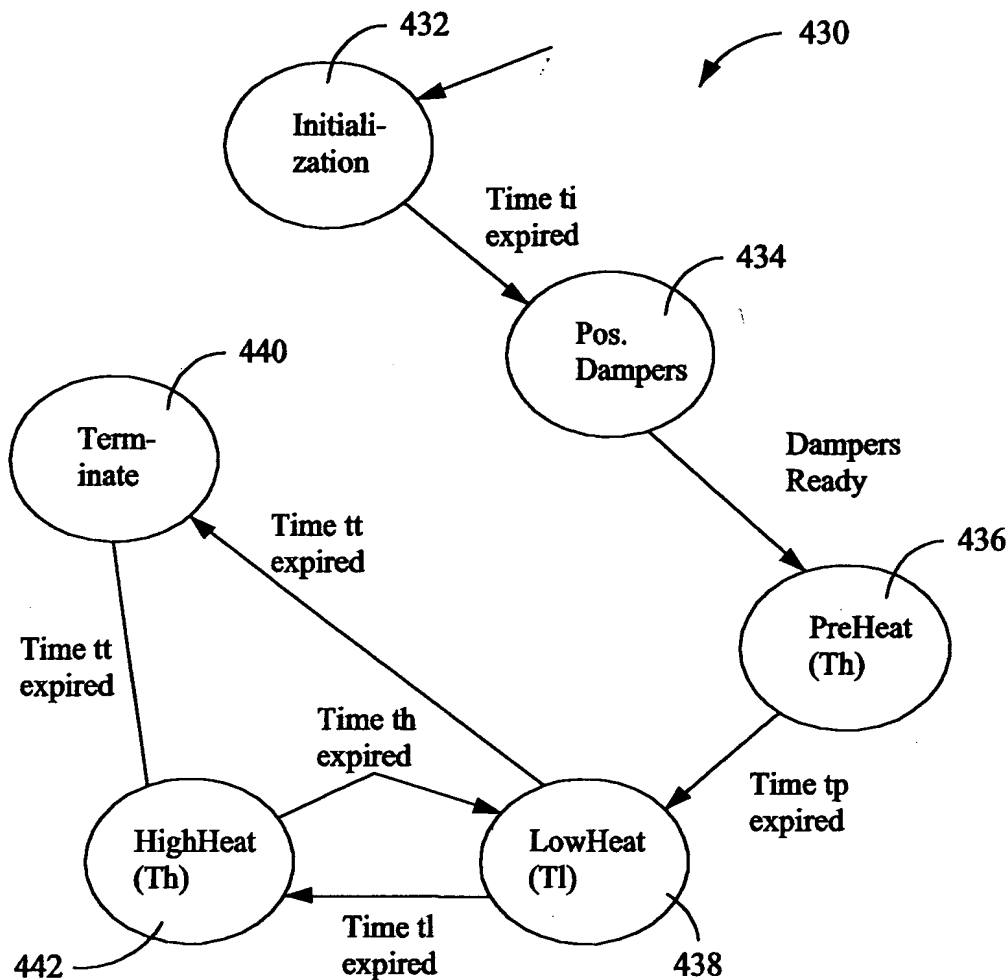


FIG. 12



13/61



Initialization: Shuts off heater and turns on fan. This mode is implemented so that the customer interface LED that is wired in parallel with the fan will turn on as soon as the button is hit. Time t_i is the initialization time and will typically be approximately one minute.

Pos. Dampers: This state shuts off the fan, sets the single damper open then closes the dual damper. It then turns the fan back on. This is done for power management

PreHeat: This state regulates the pan temperature

LowHeat

HighHeat:

Terminate: This mode closes both dampers and shuts off the fan then returns to idle.

FIG. 13



14/61

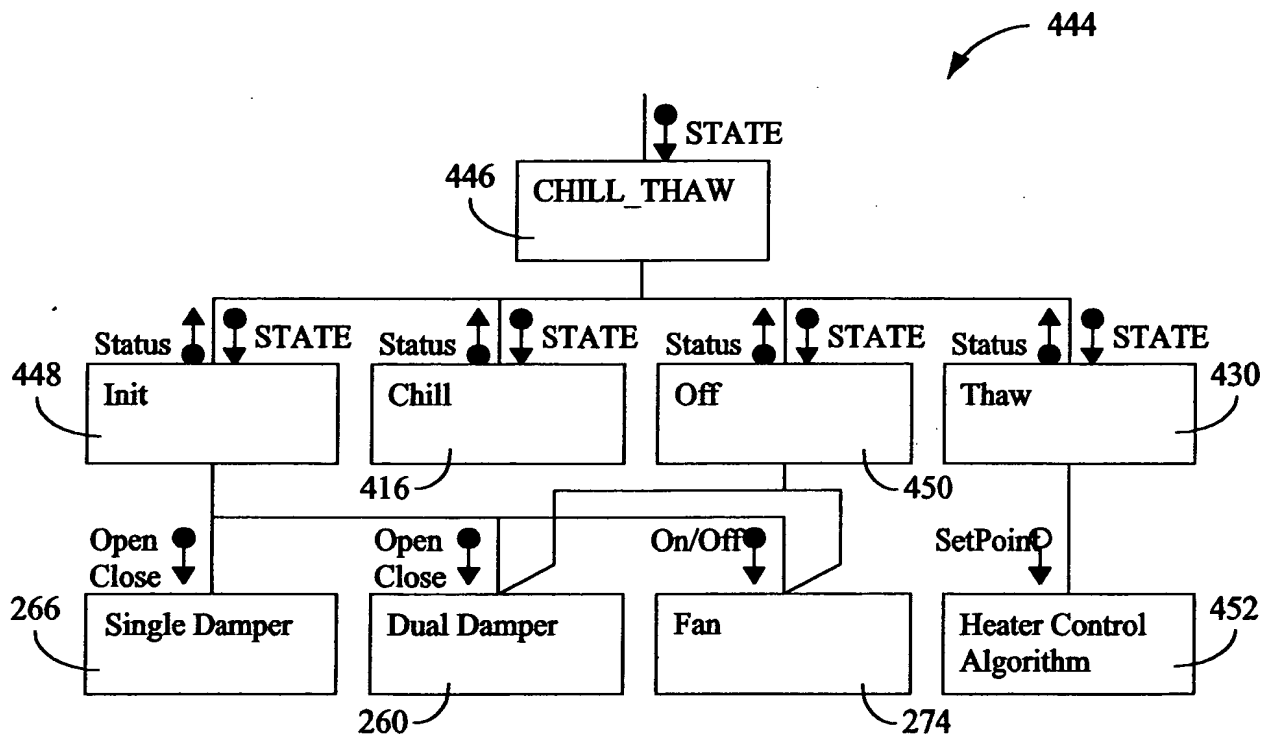
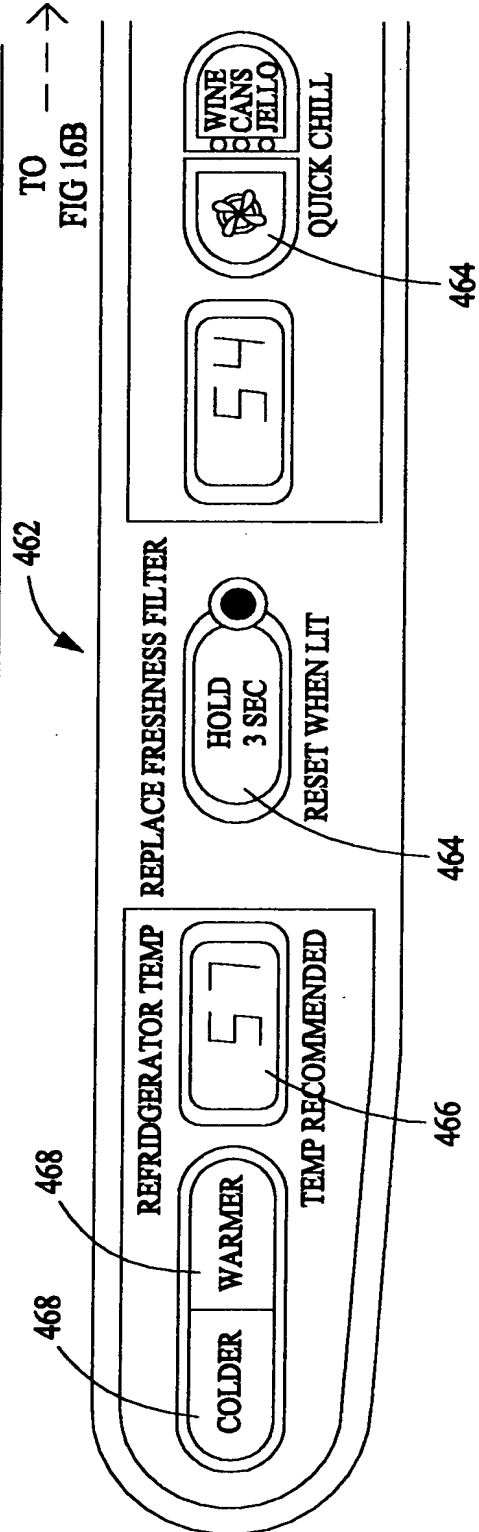
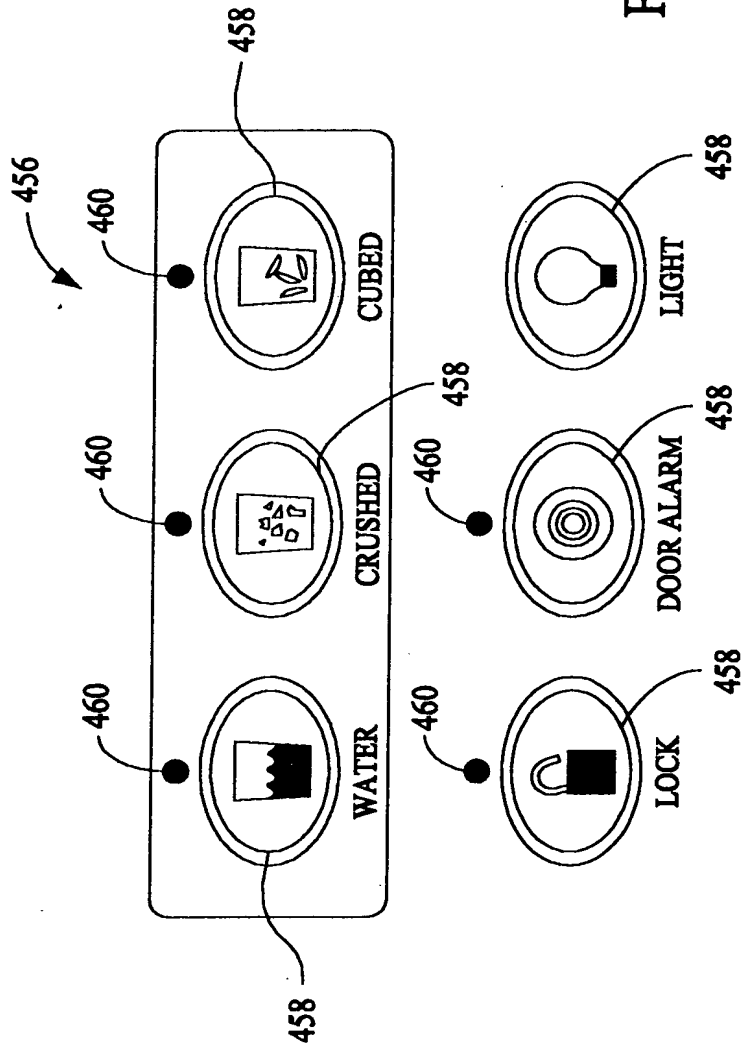


FIG. 14



15/61





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

16/61

TO
FIG 16A

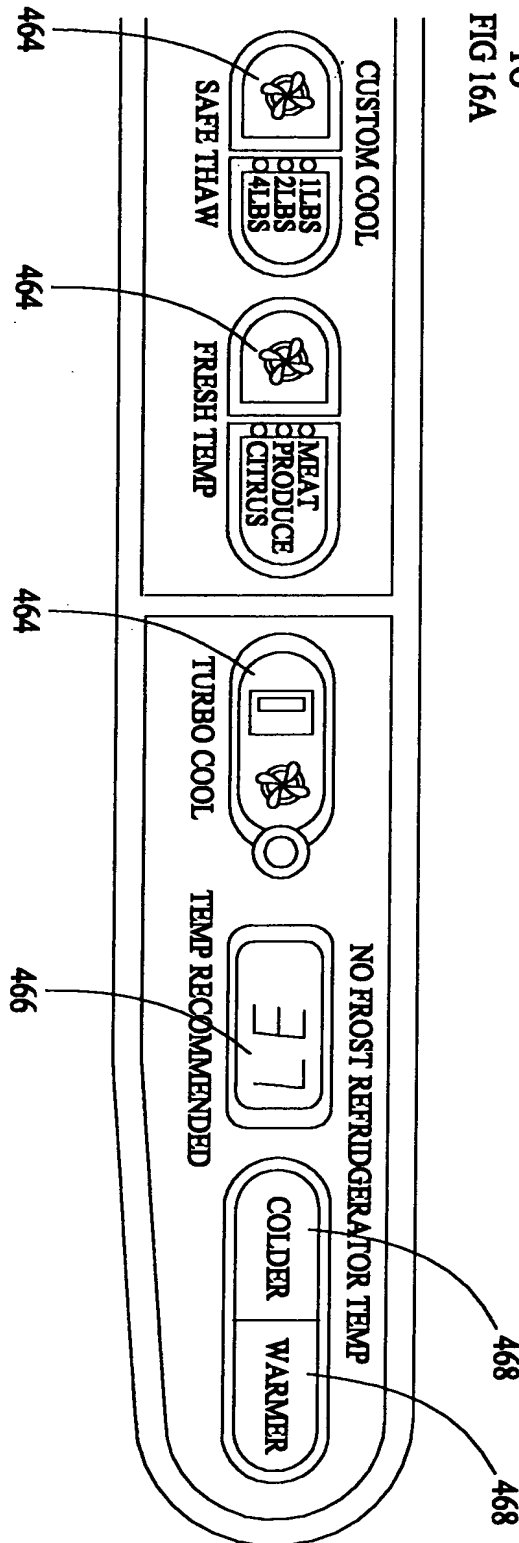


FIG. 16B

17/61

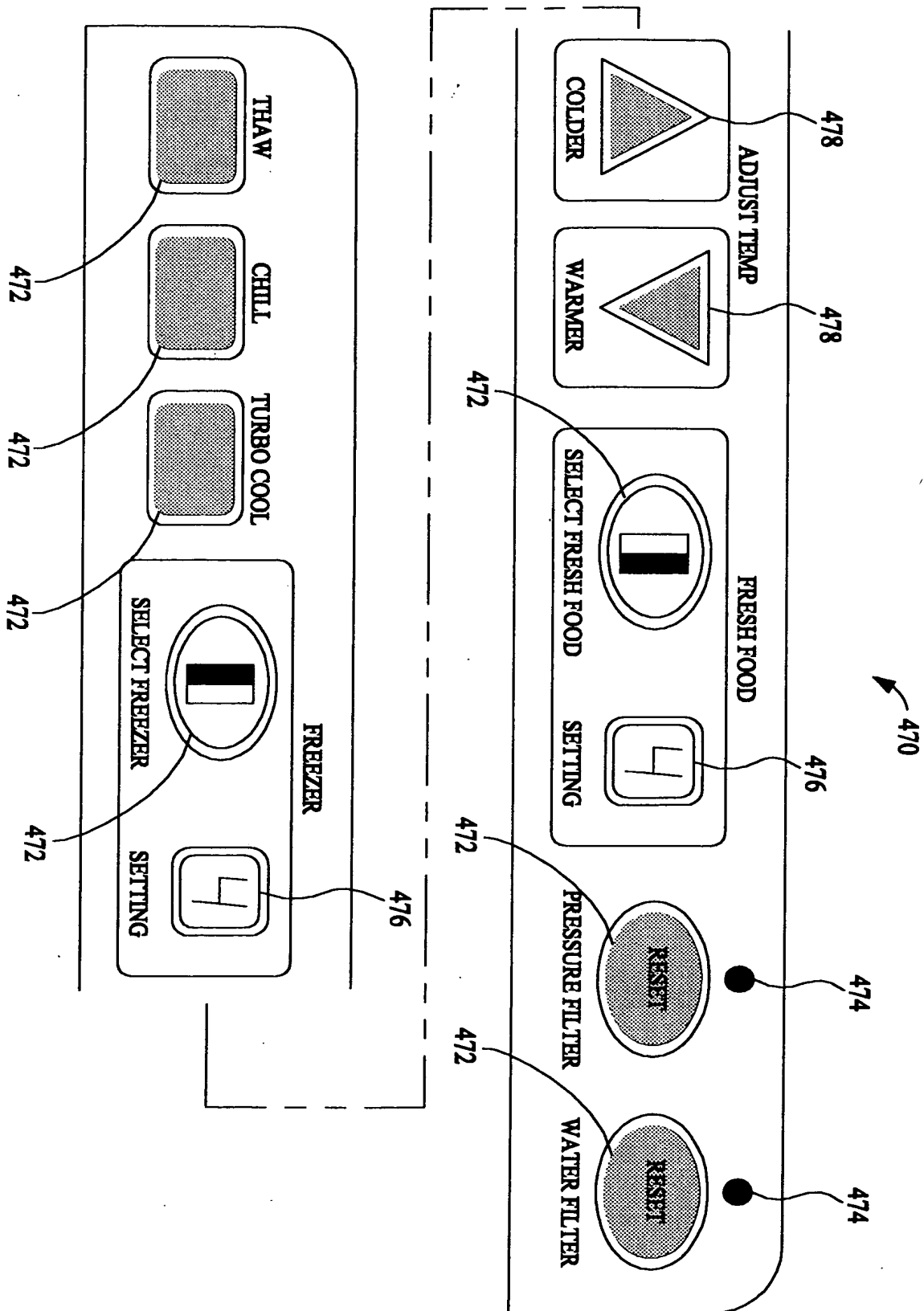
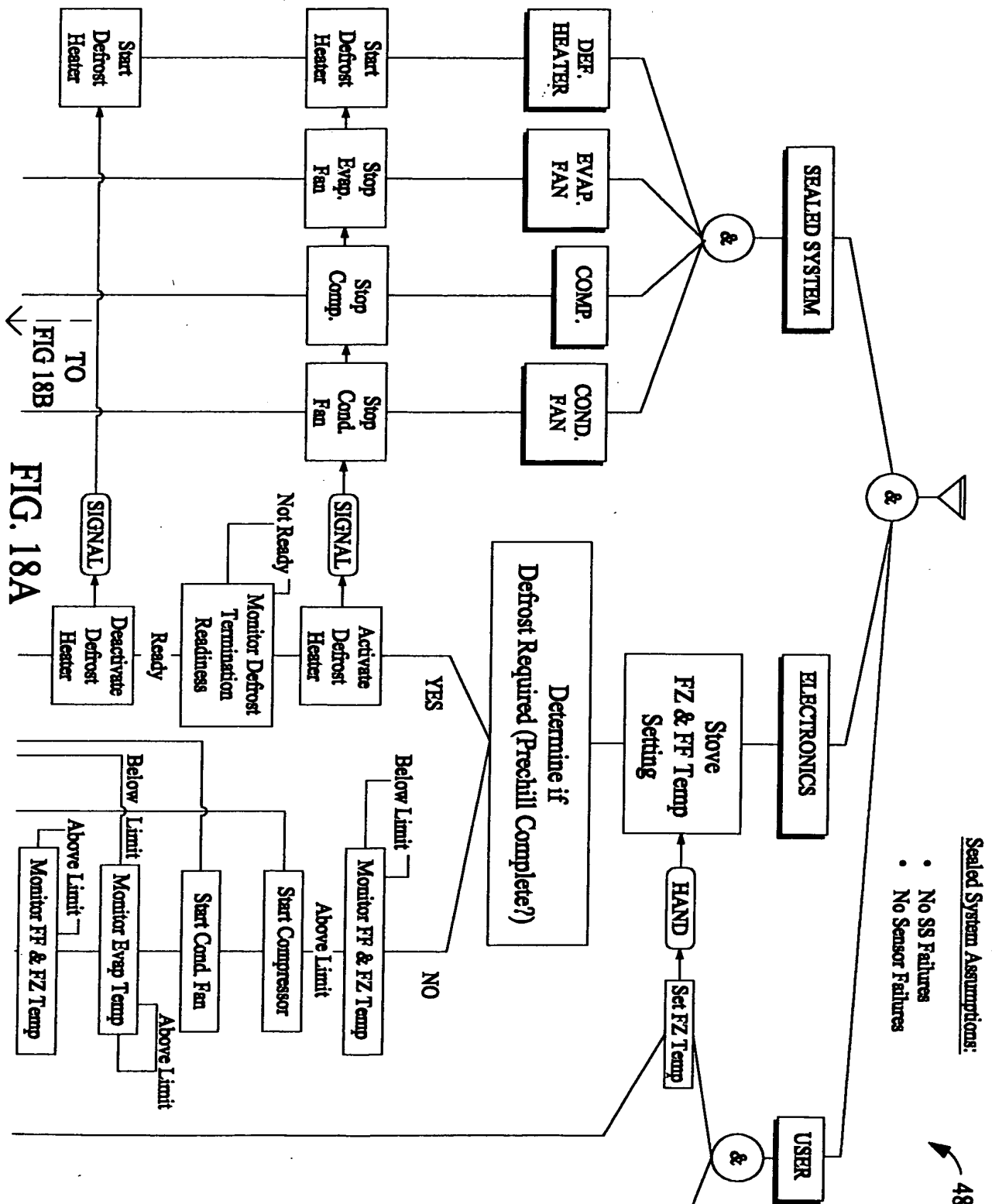
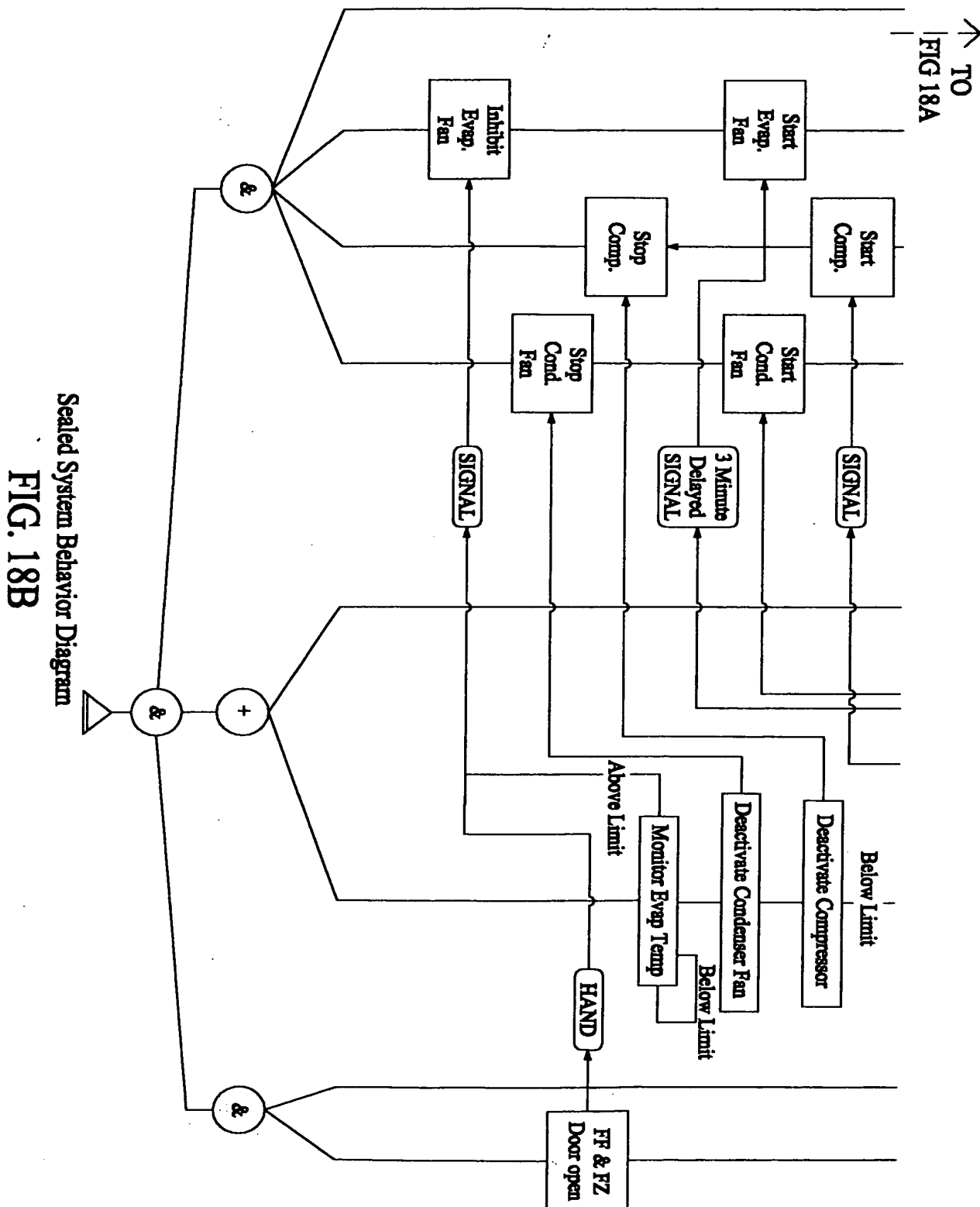


FIG. 17



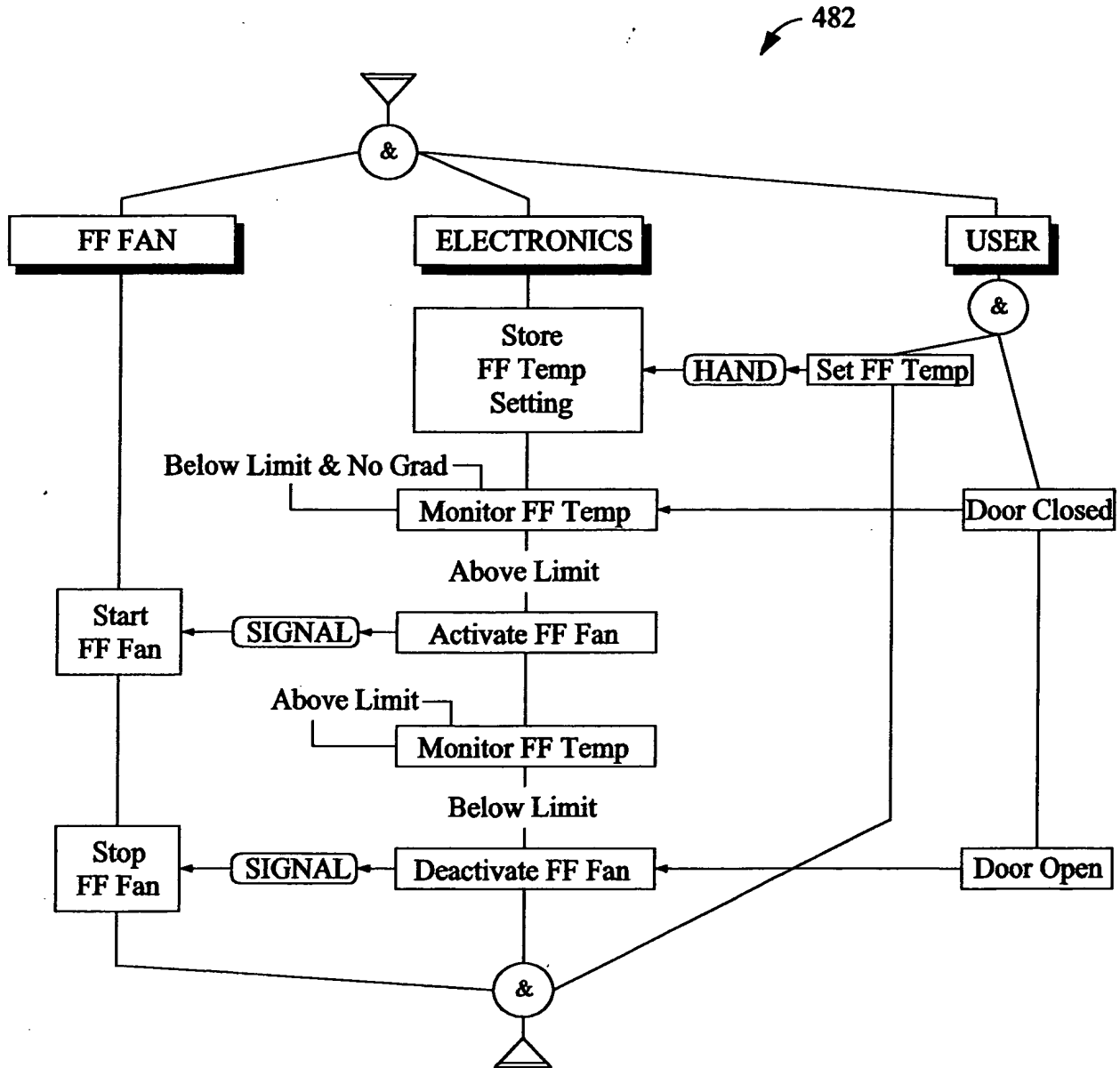


19/61





20/61



Fresh Food Fan Behavior Diagram

FIG. 19



21/61

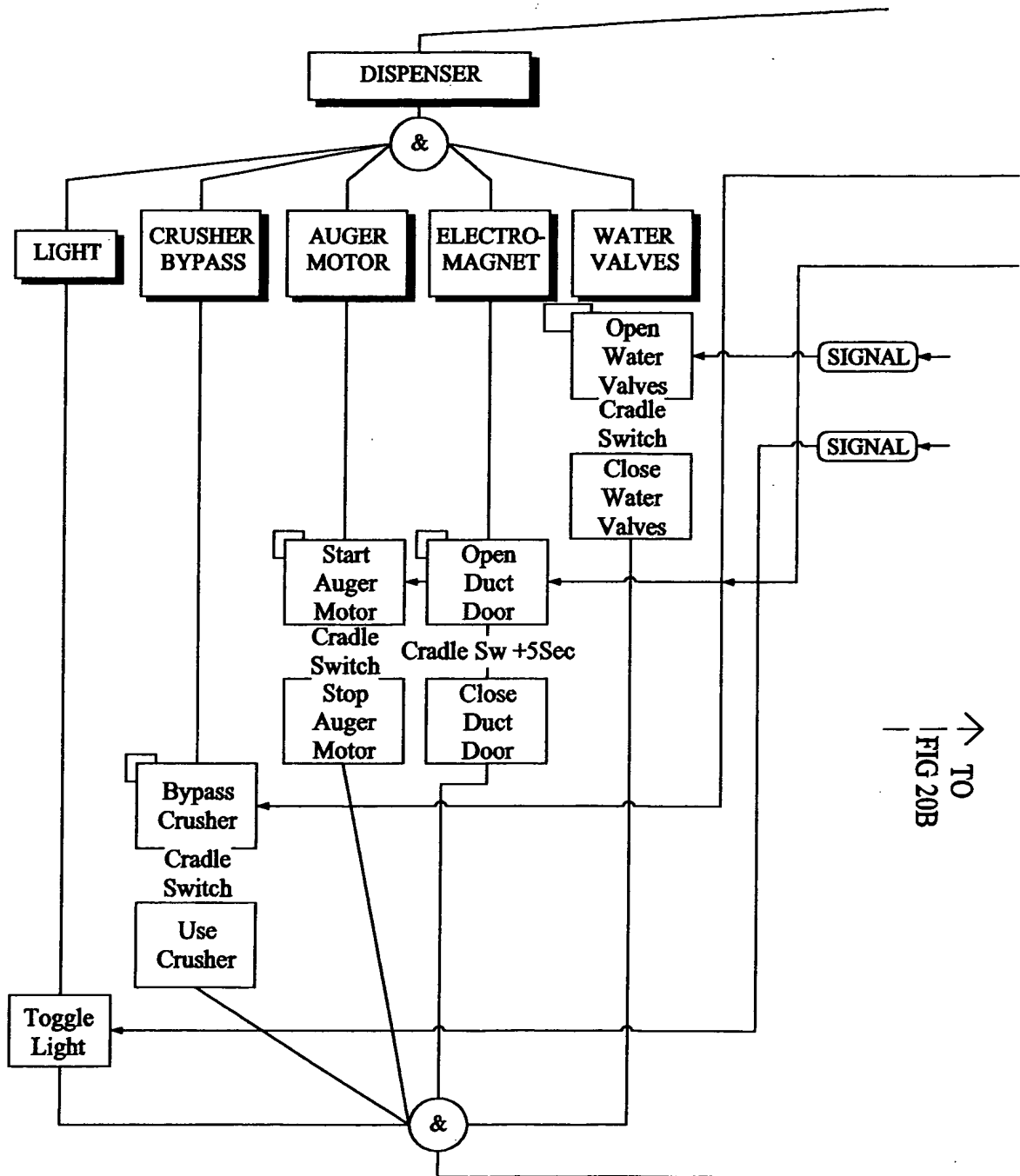


FIG. 20A

Dispenser Behavior

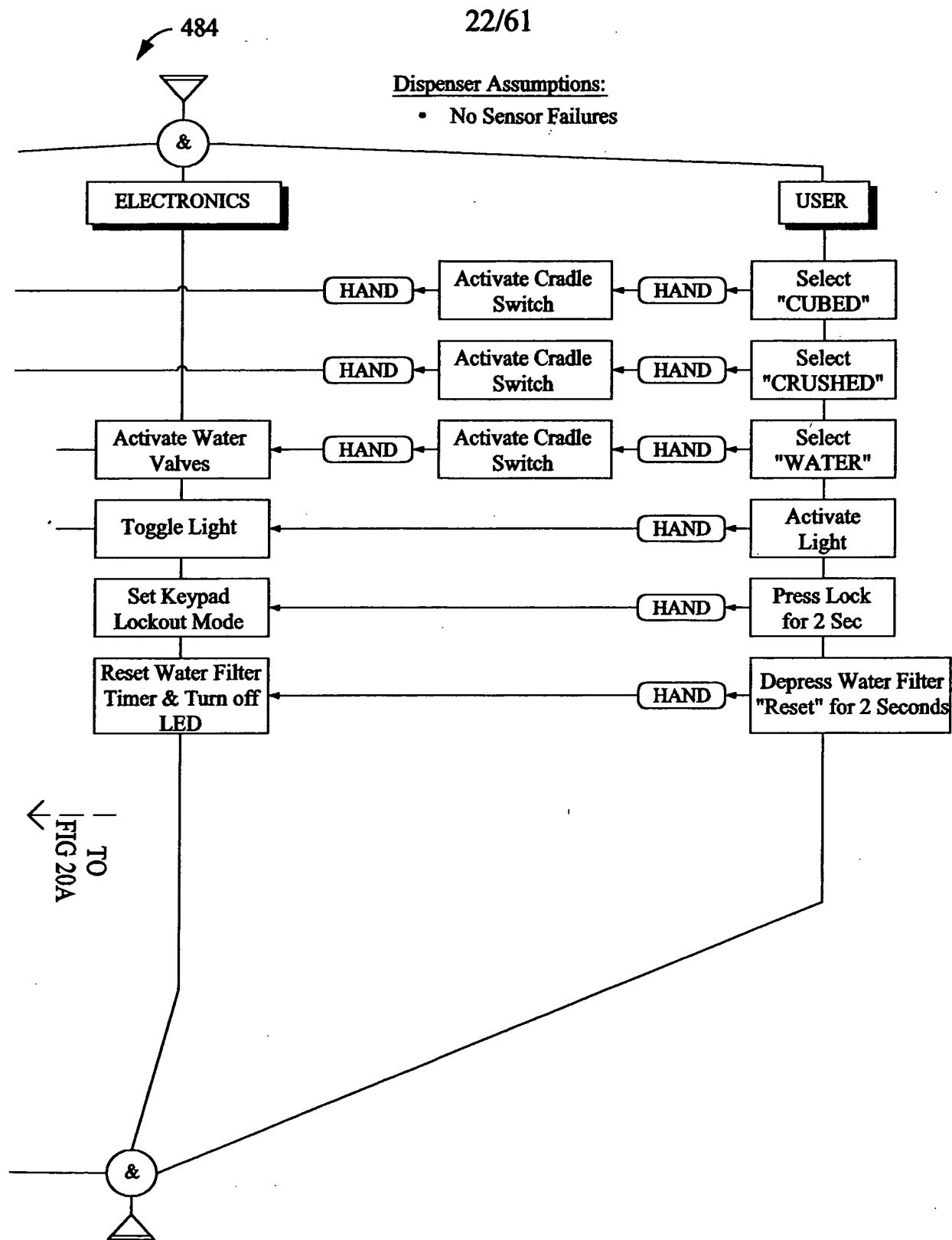
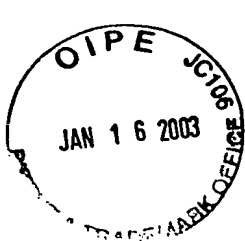


FIG. 20B



23/61

486

Dispenser Assumptions:

- No Sensor Failures

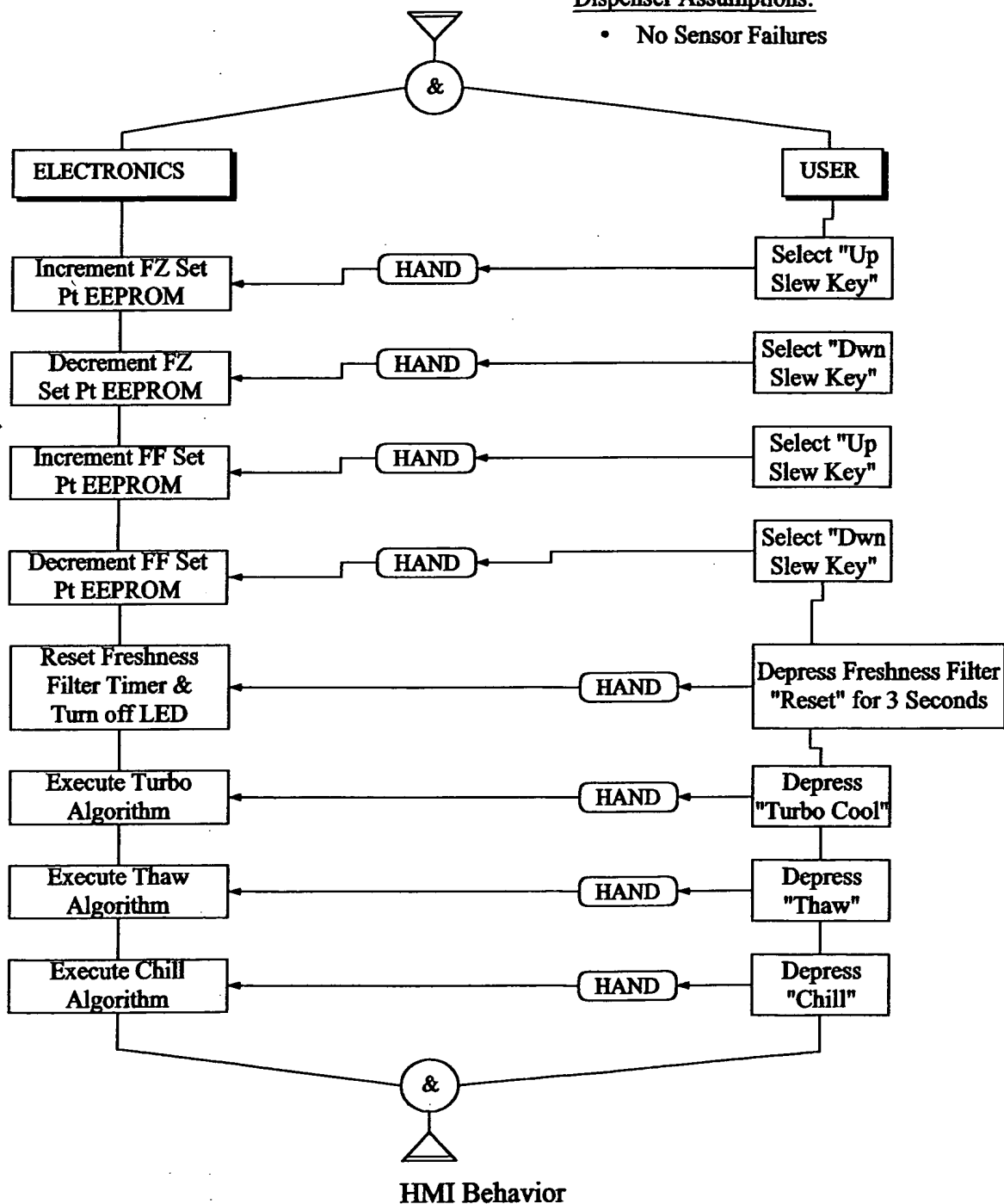
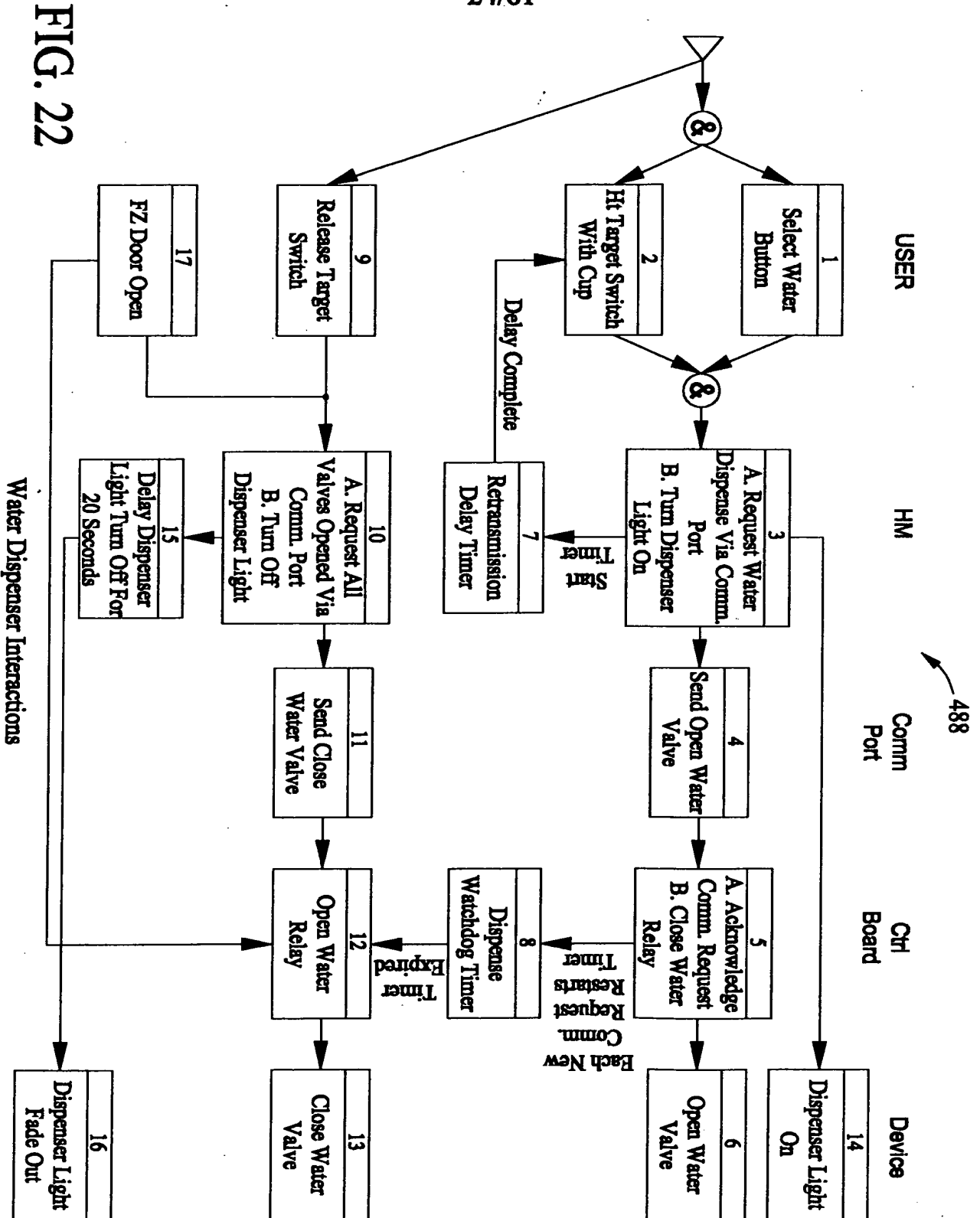


FIG. 21

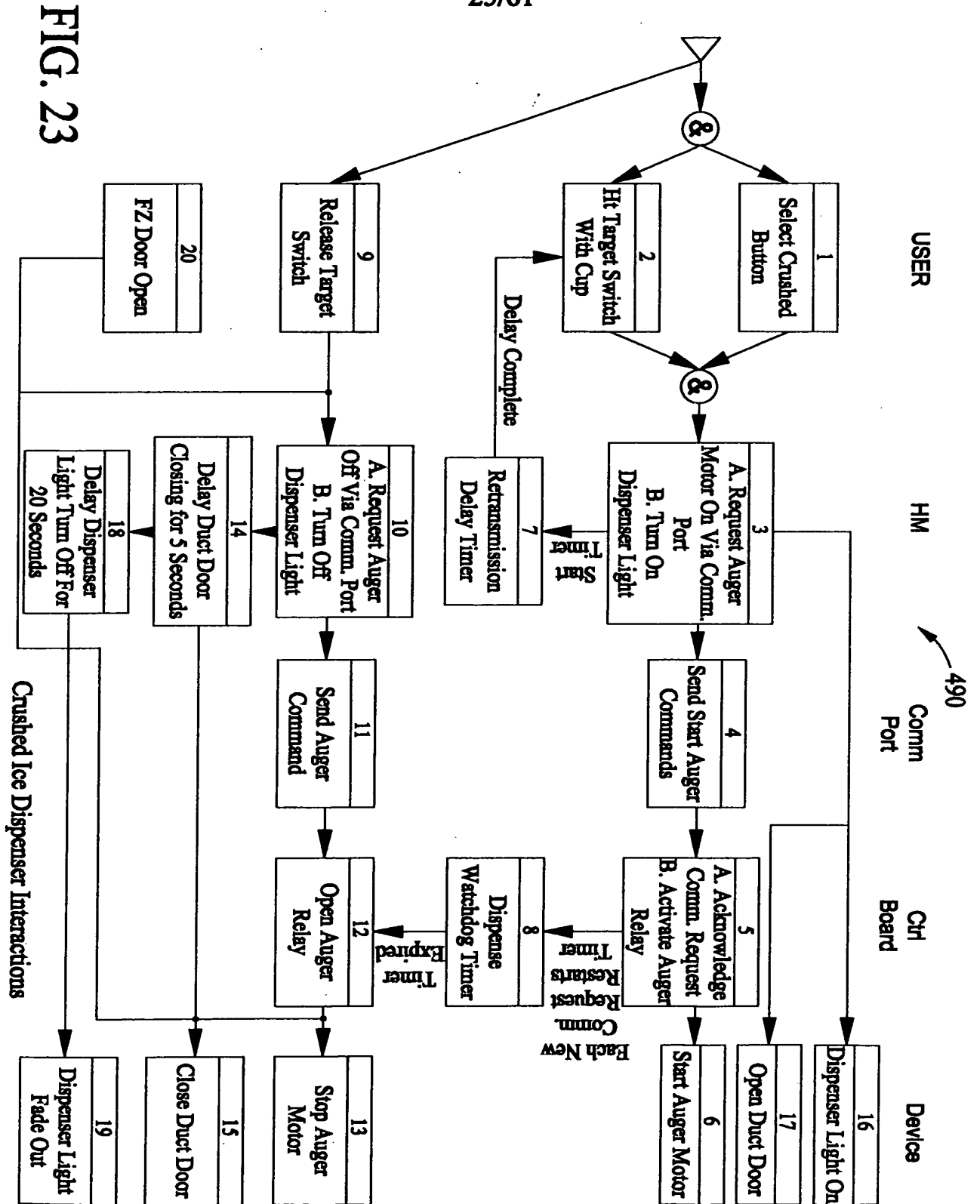


24/61





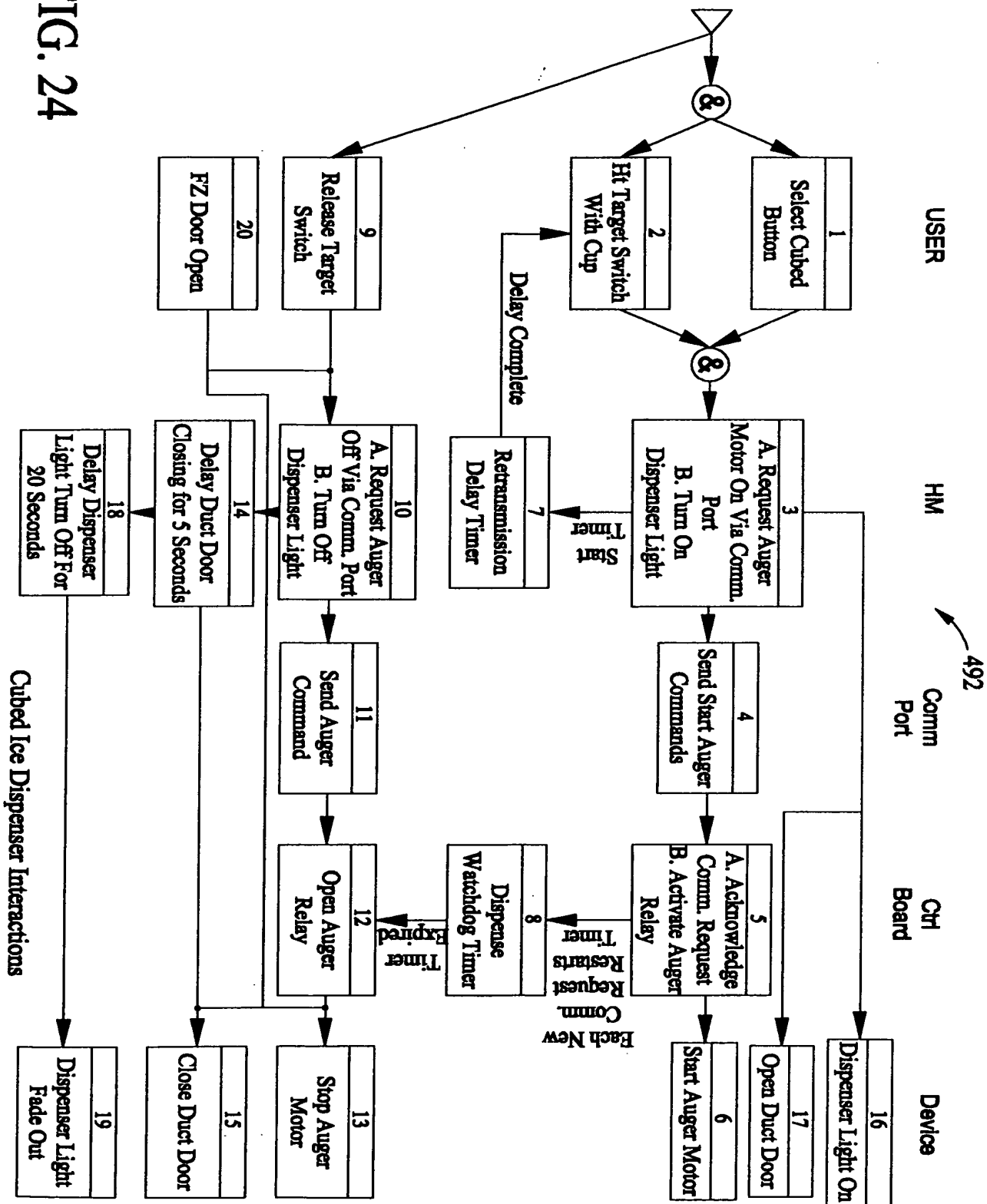
25/61





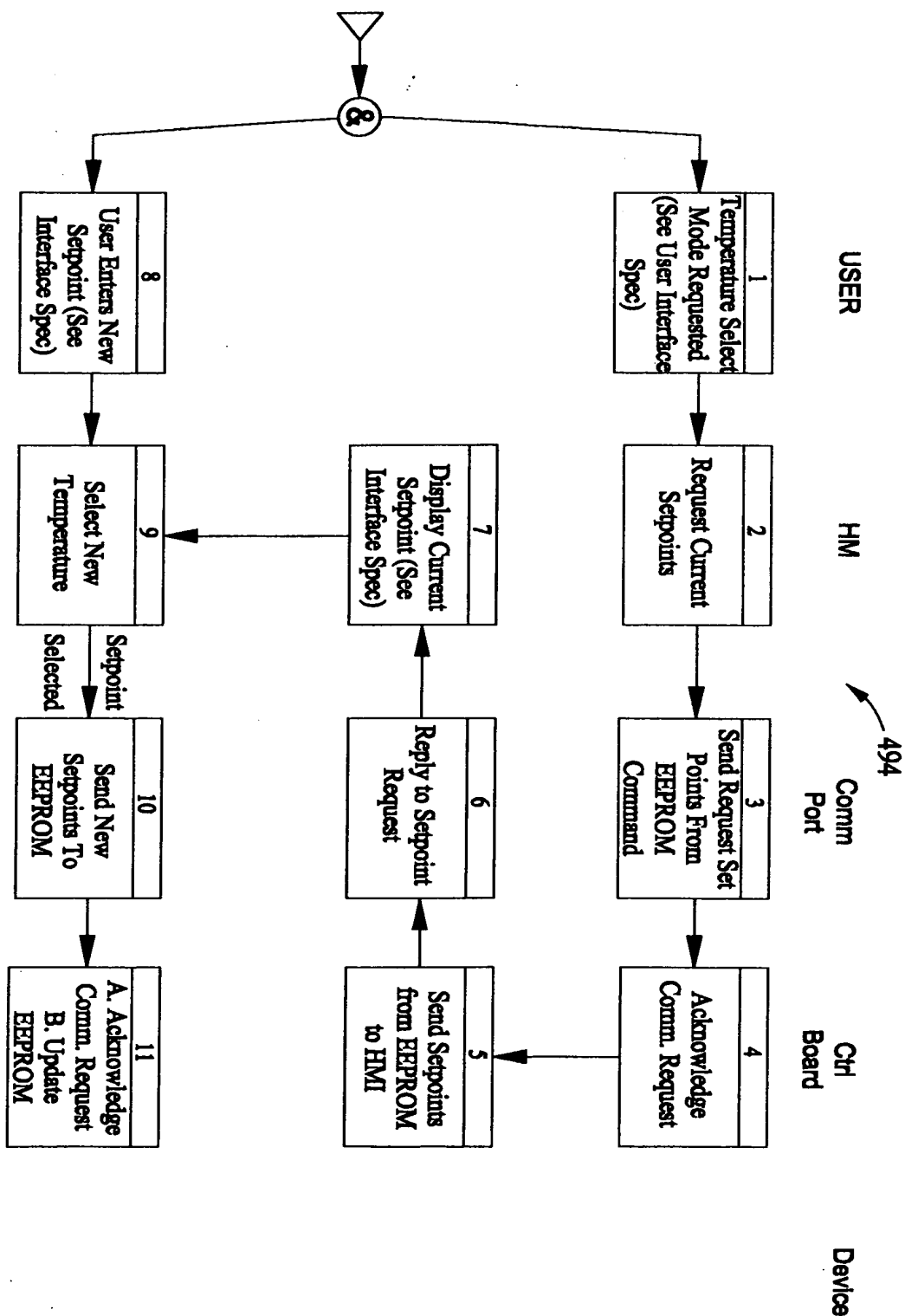
26/61

FIG. 24





27/61



NOTE: Setpoint Selected implies that the final selection has been made and that the selection has timed out.

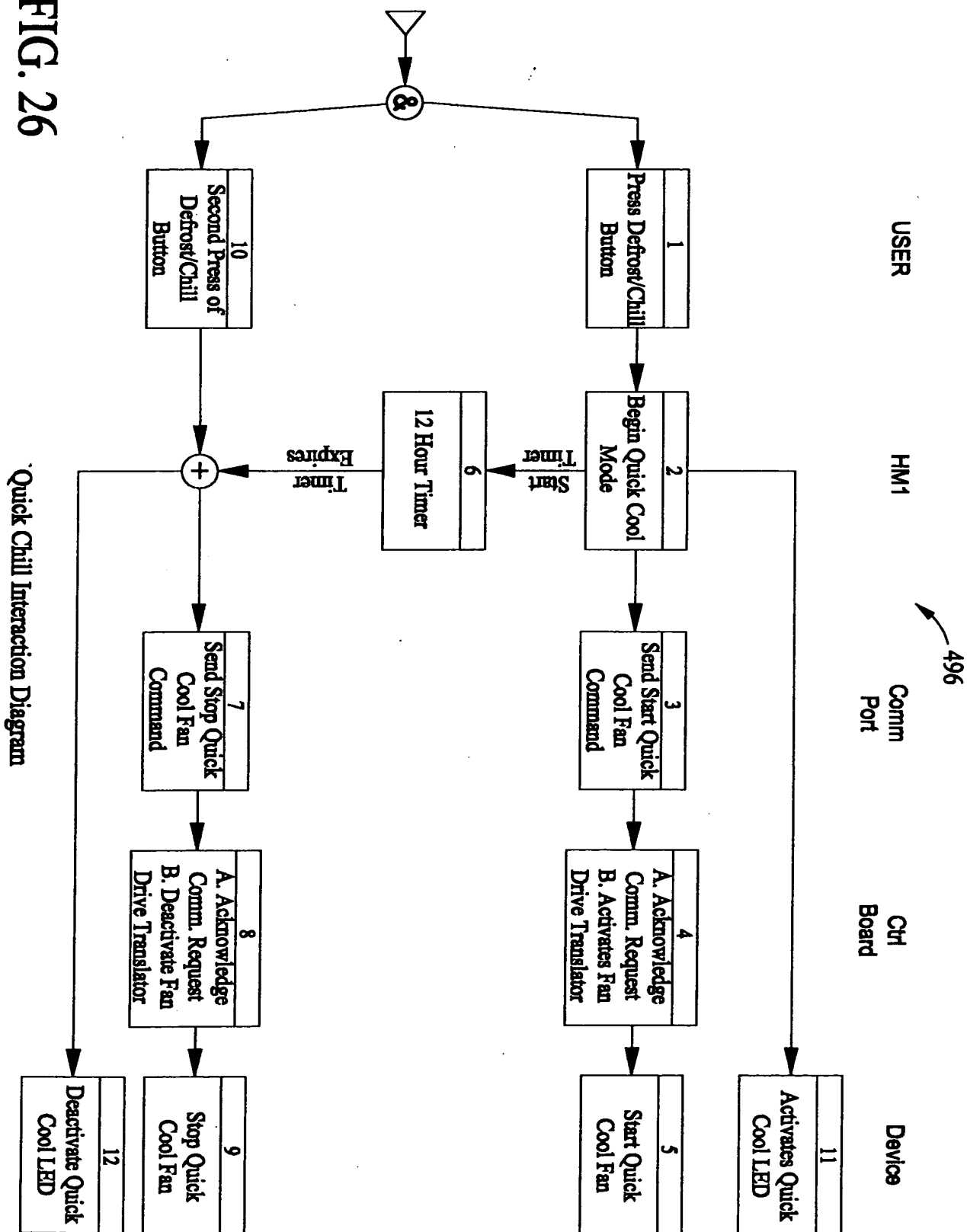
FIG. 25

Temperature Setting Interaction Diagrams



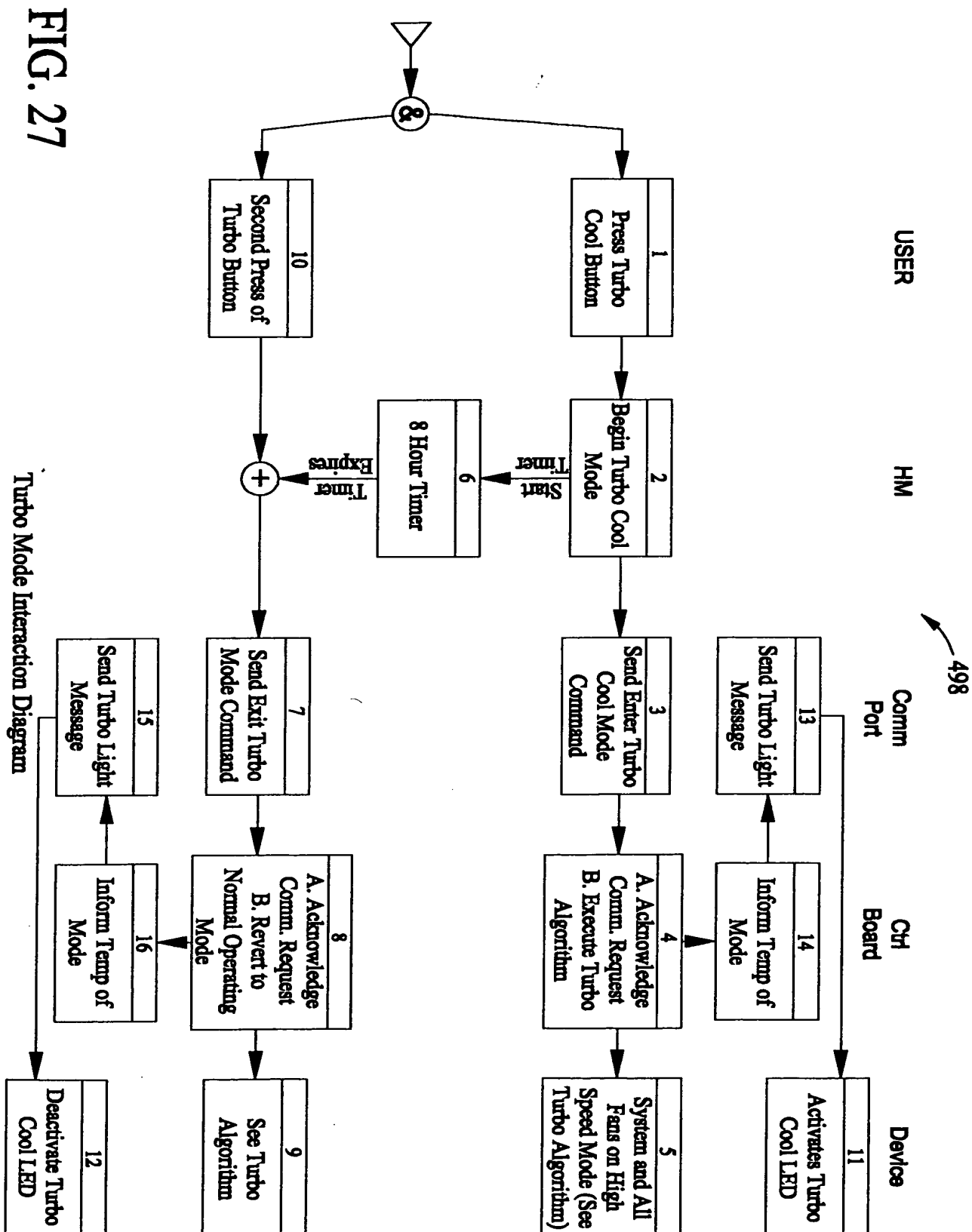
28/61

FIG. 26



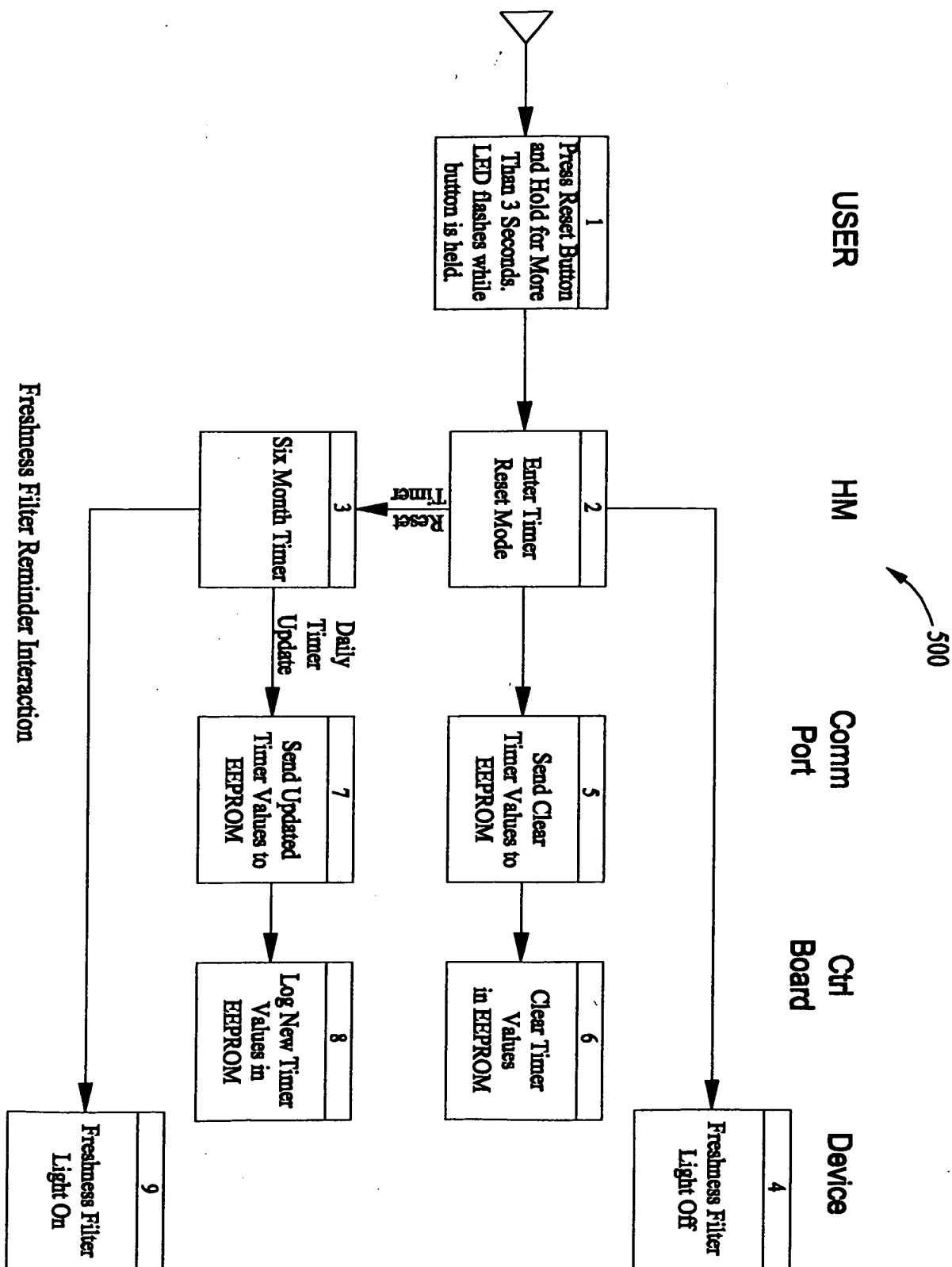


29/61



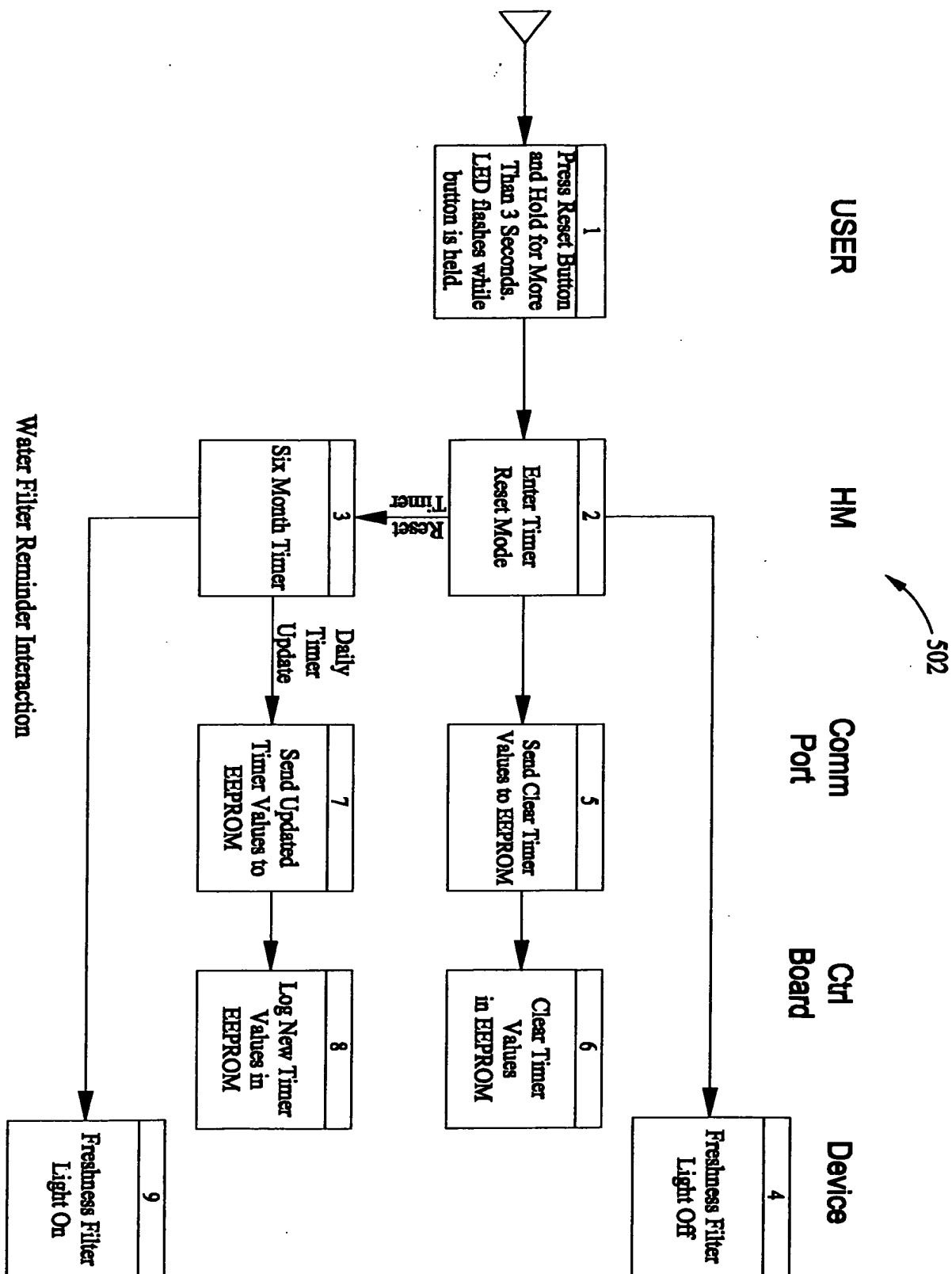


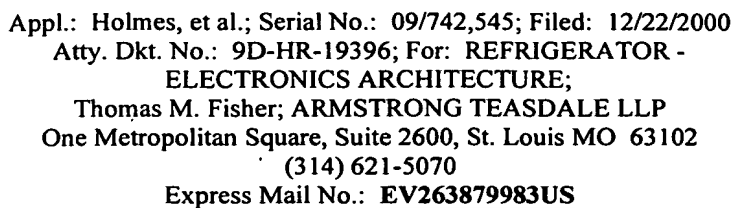
30/61





31/61





504



FIG. 30



33/61

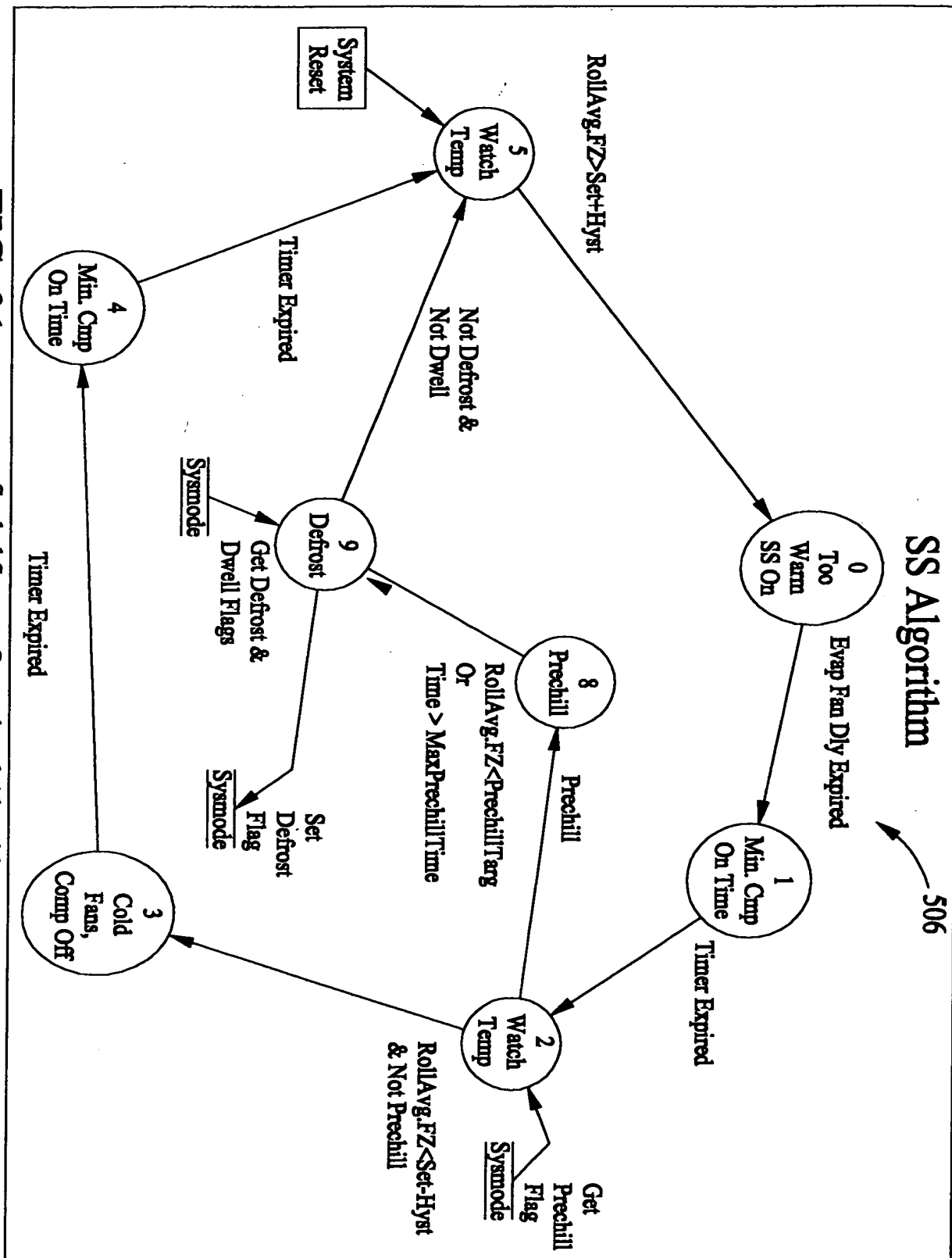
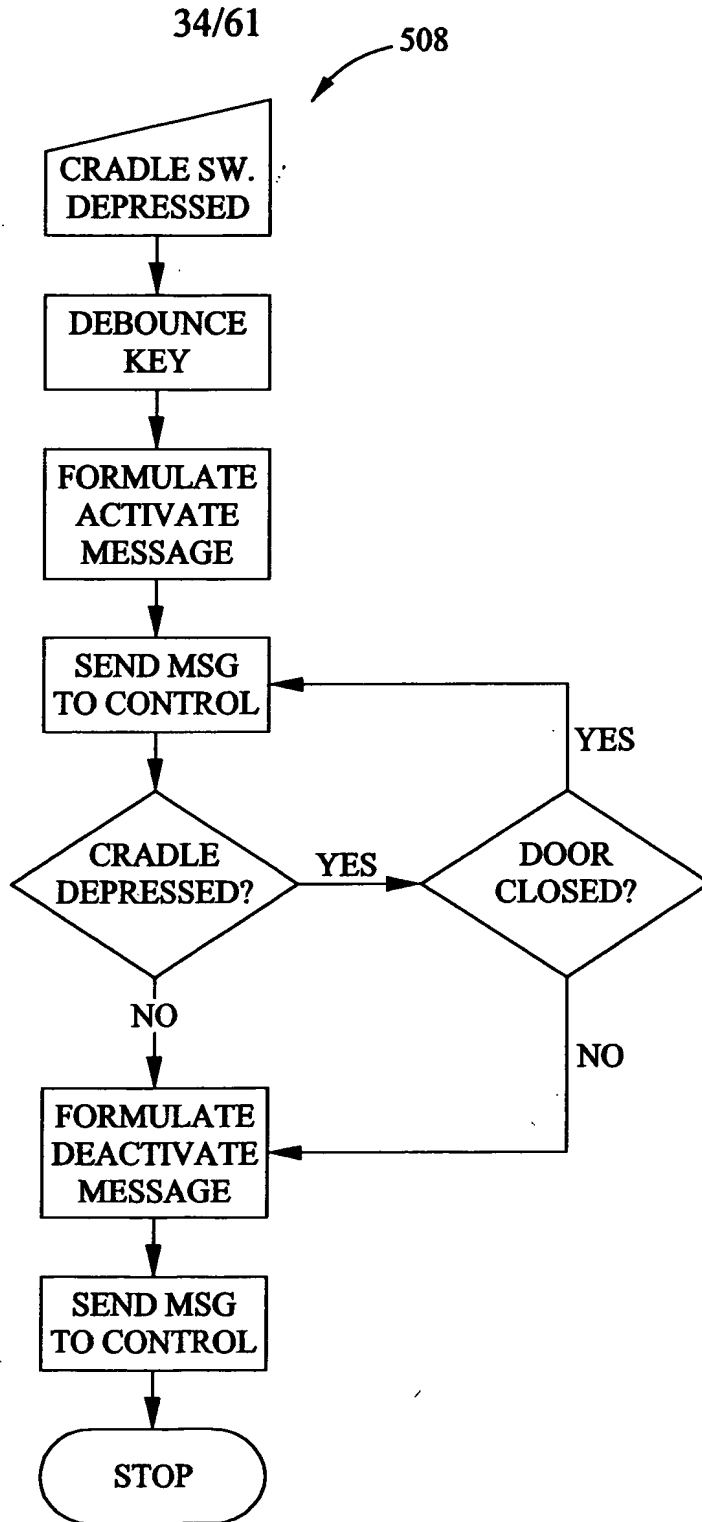


FIG. 31

Scaled System Operational Algorithm



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US



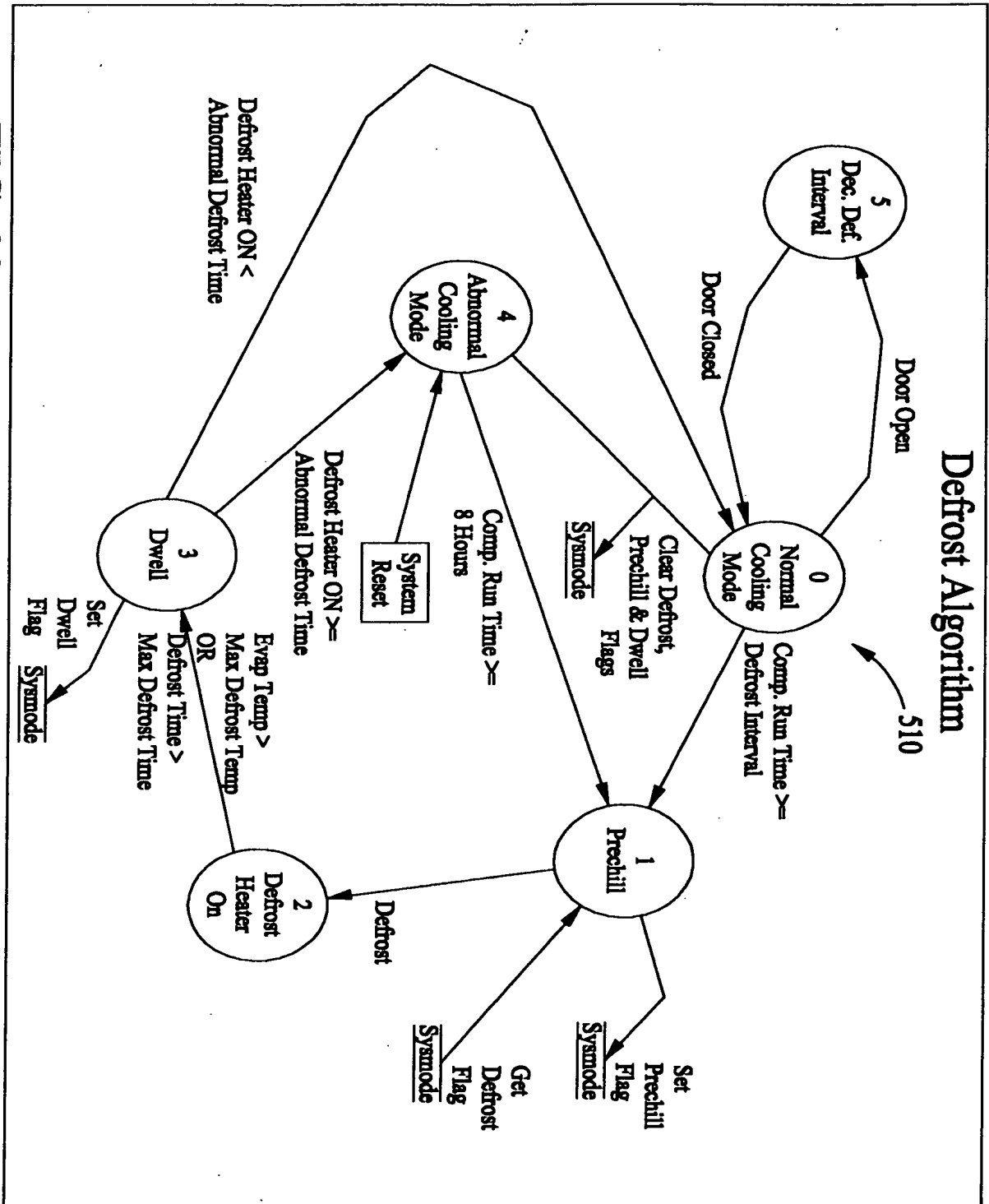
Dispenser Control Algorithm

FIG. 32

35/61

FIG. 33

Defrost Control State Diagram





36/61

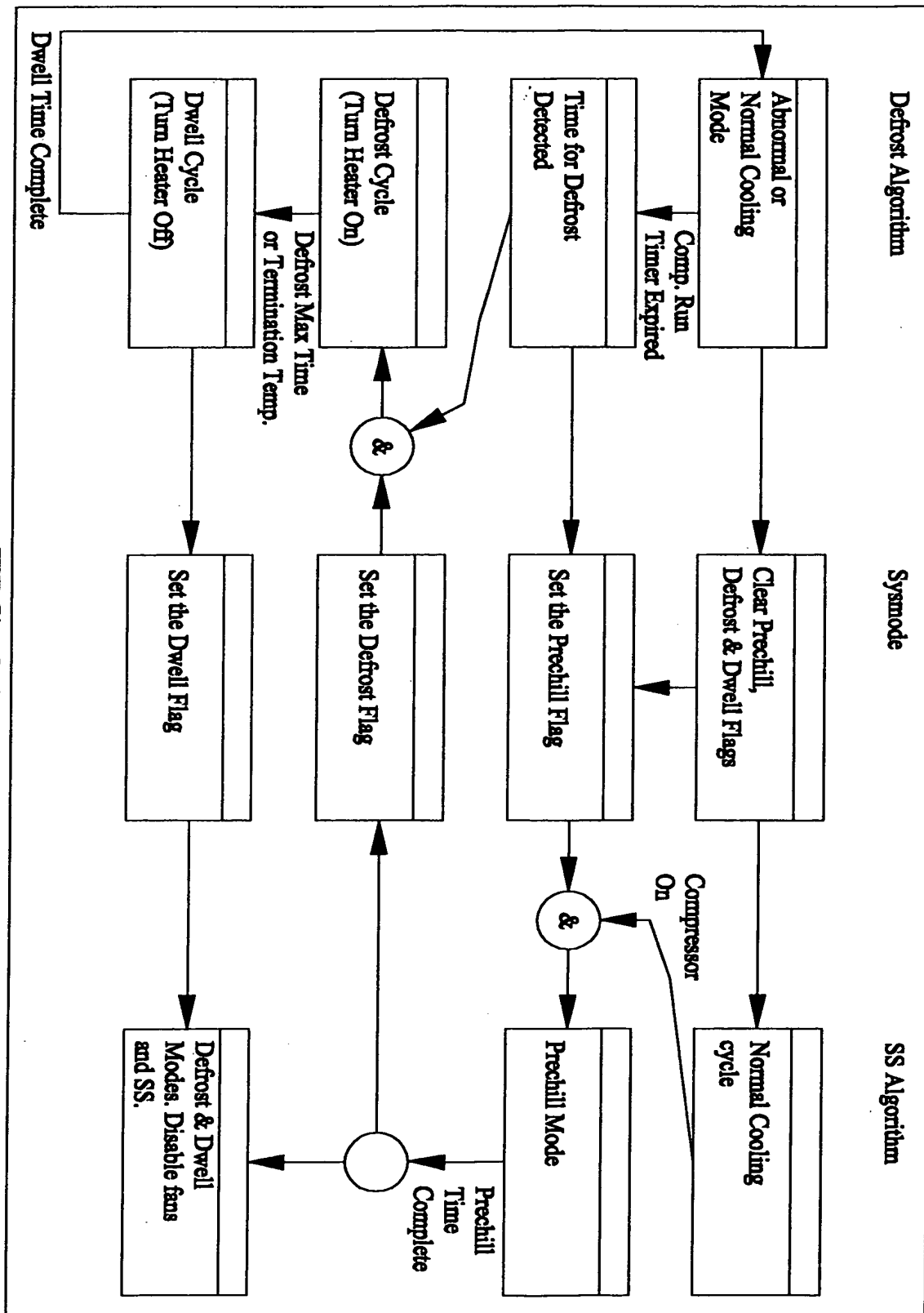
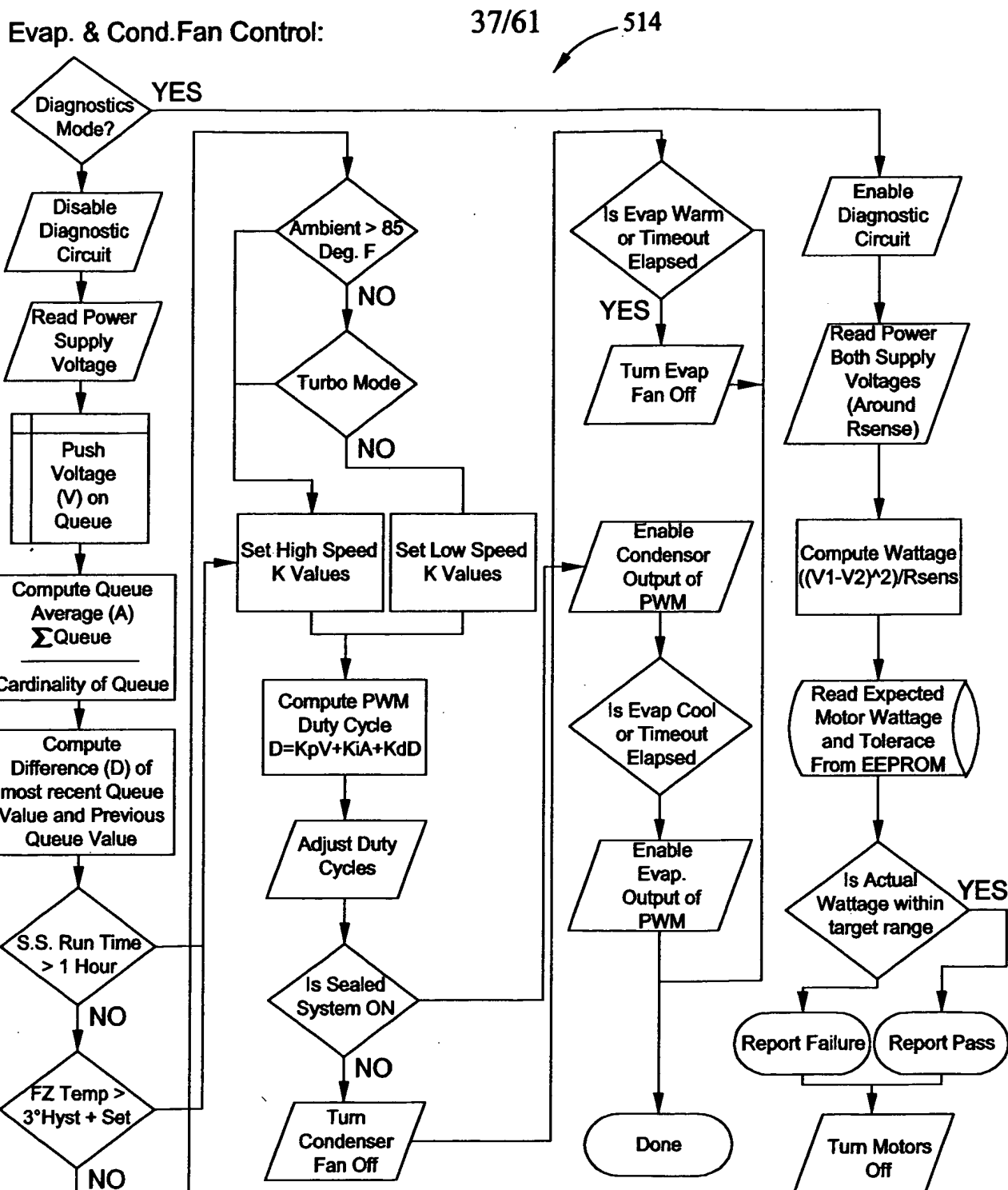


FIG. 34



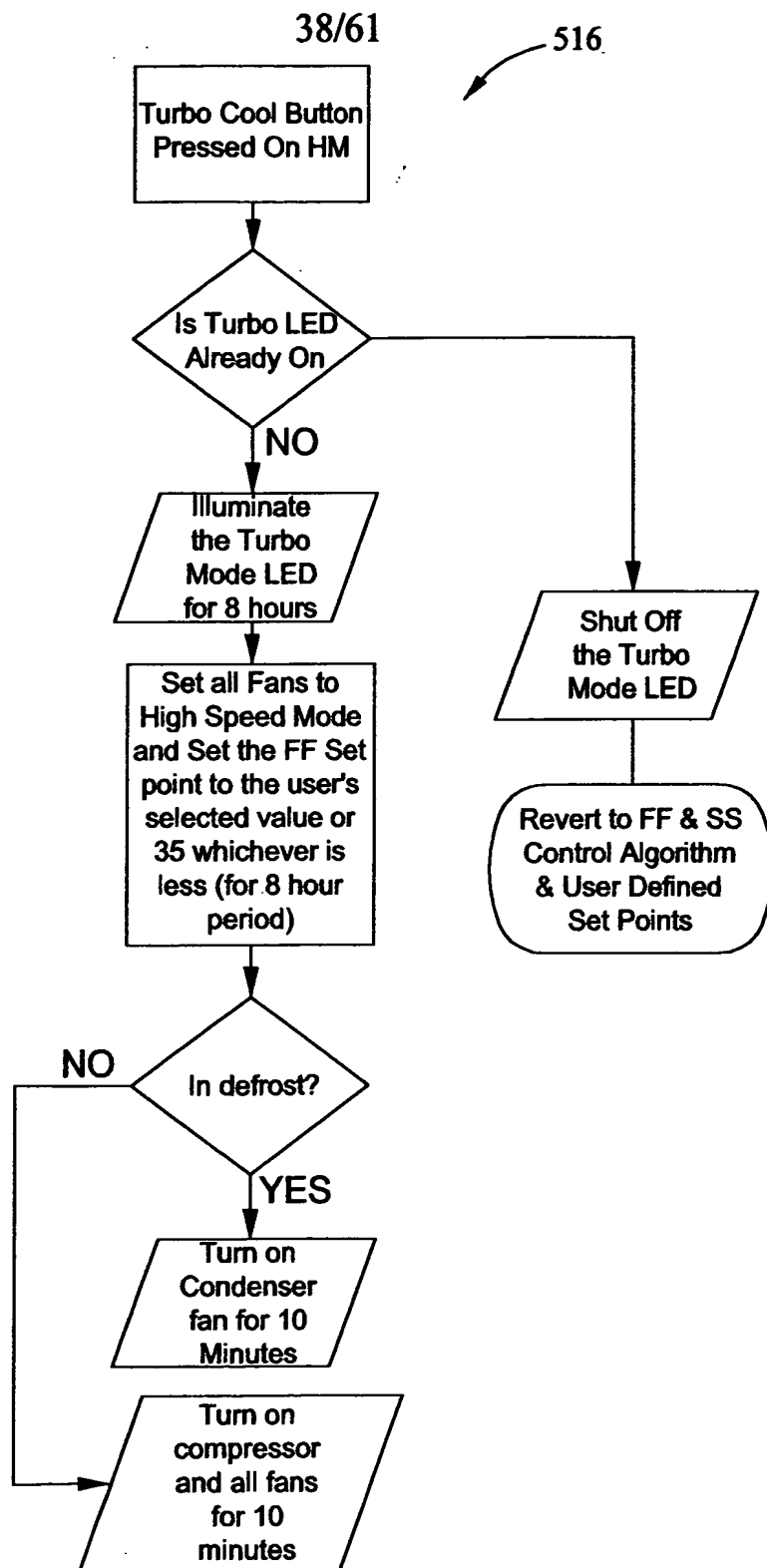
Fan Speed Control

- Notes:
1. The FF & Evaporator fans will shut off for the first five minutes that the door is open
 2. Only one fan at a time can be on at a time during diagnostics.
 3. Once the fan has been switched to high speed, it remains in that state until the operational cycle is complete.

FIG. 35



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

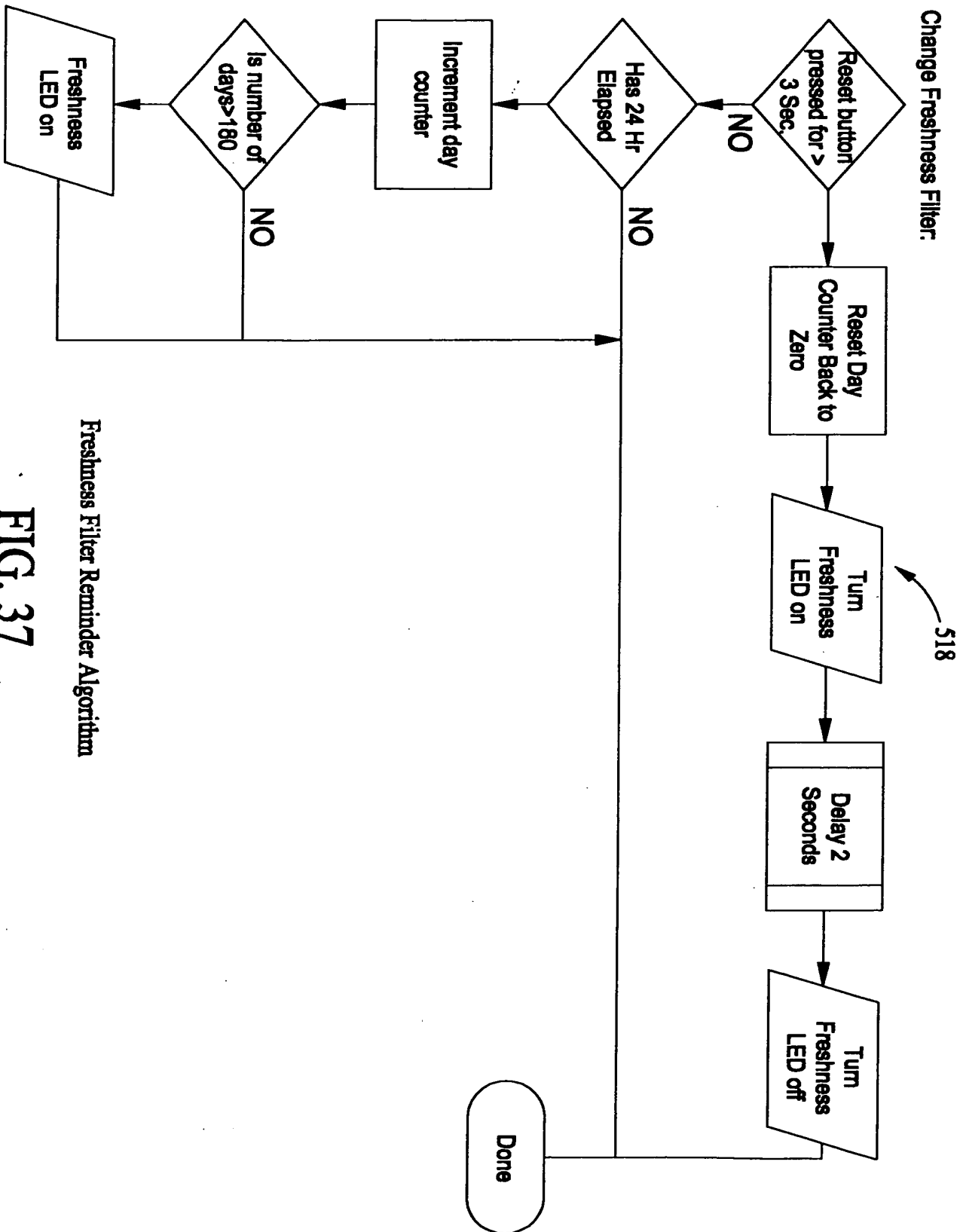


Turbo Cycle Algorithm

FIG. 36

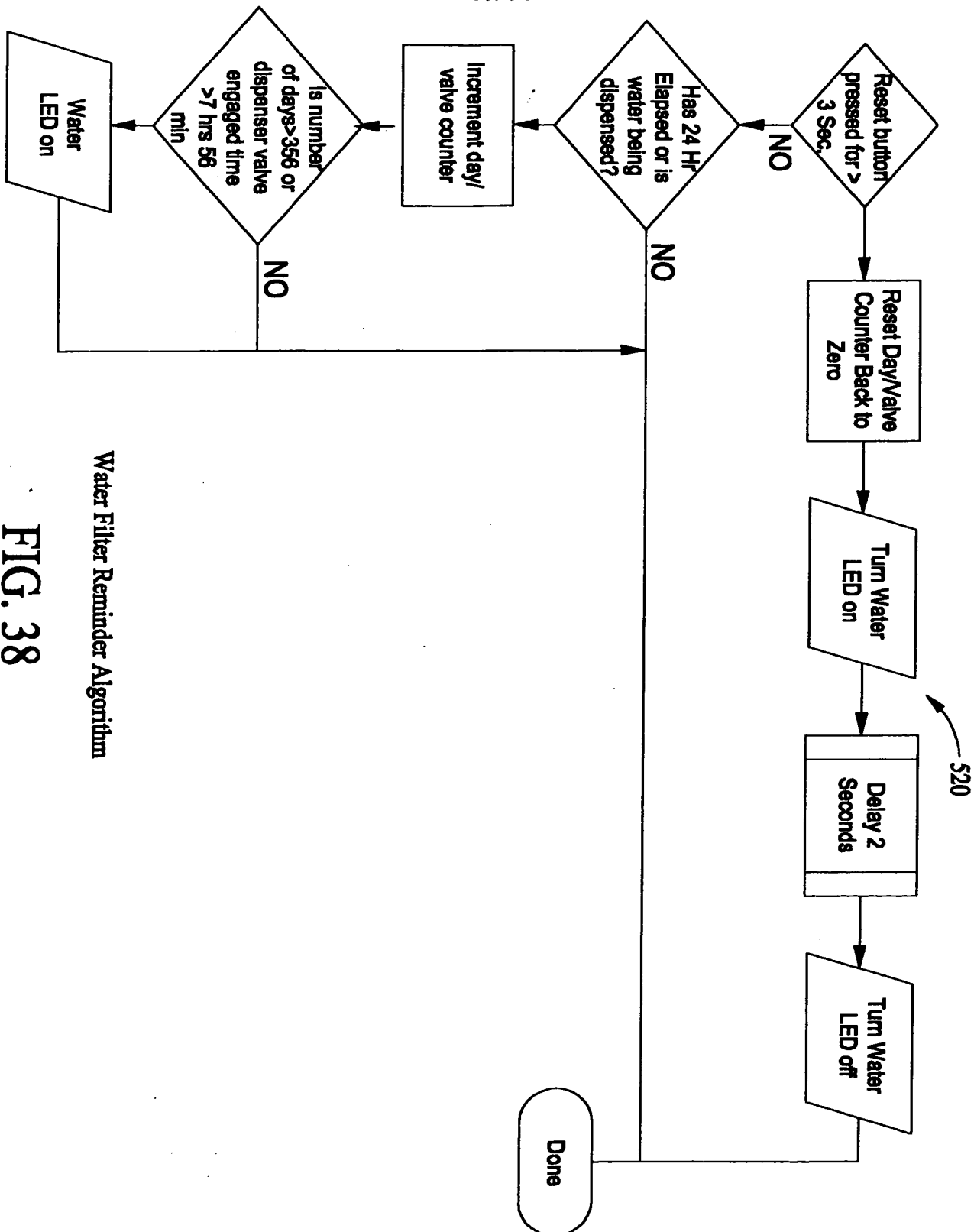


39/61



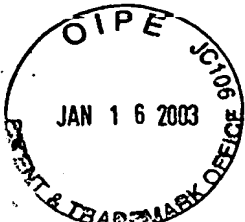


40/61



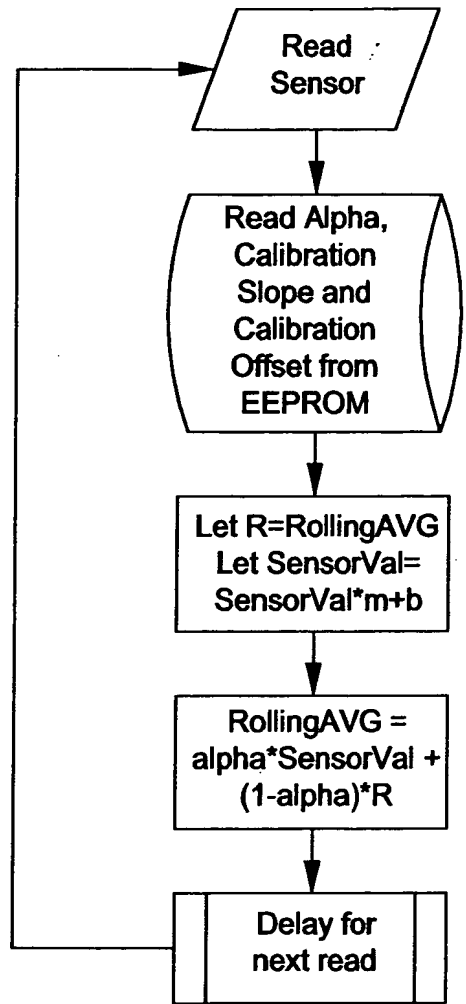
Water Filter Reminder Algorithm

FIG. 38



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

41/61
SENSOR READ AND ROLLING AVERAGE ALGO: 522



NOTE:
Fresh food average uses this algorithm twice to create a 2nd pole filter.

FIG. 39

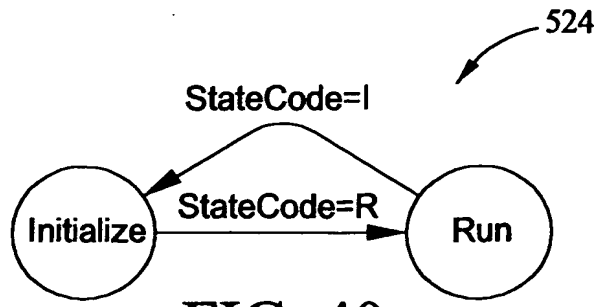
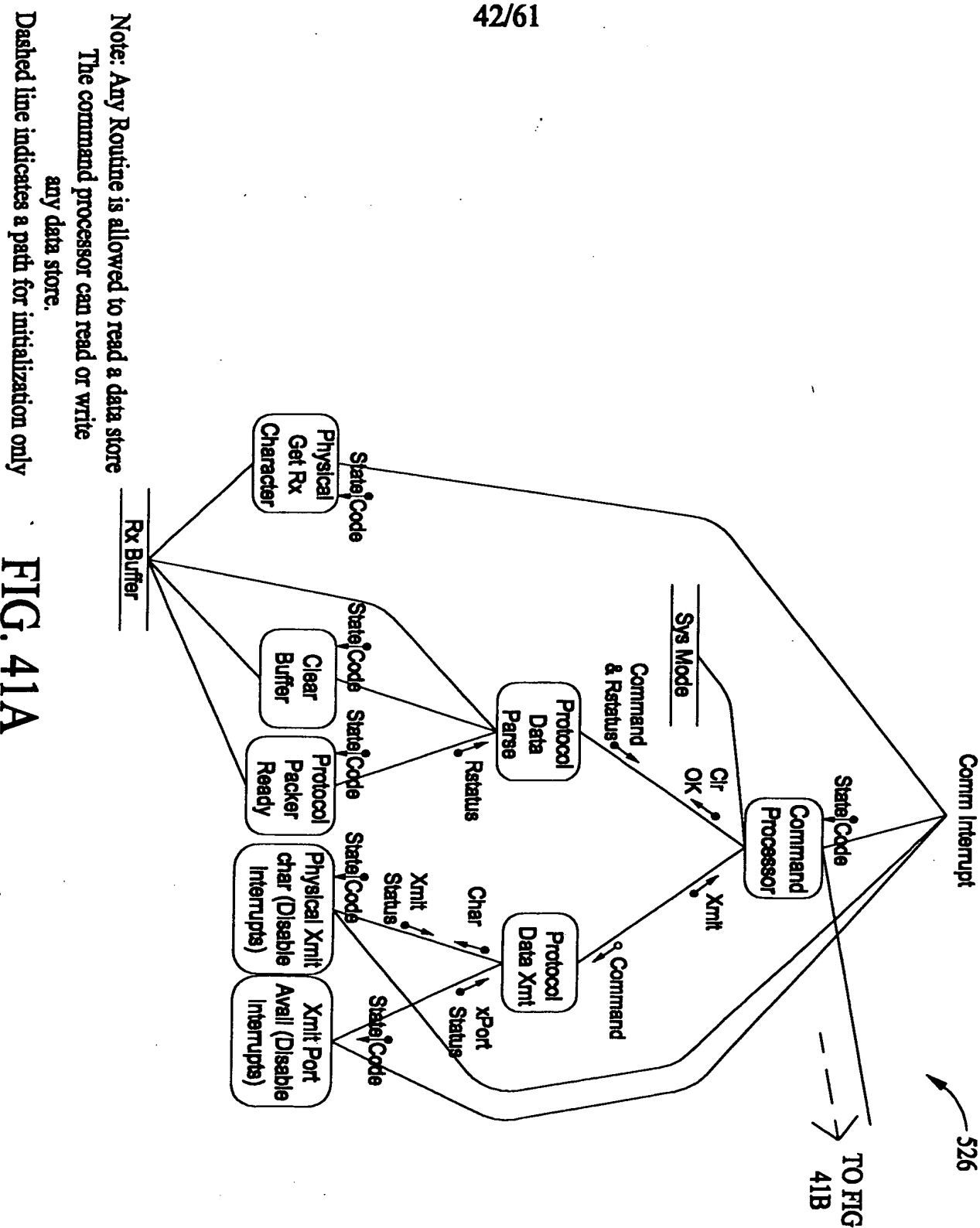


FIG. 40

42/61





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

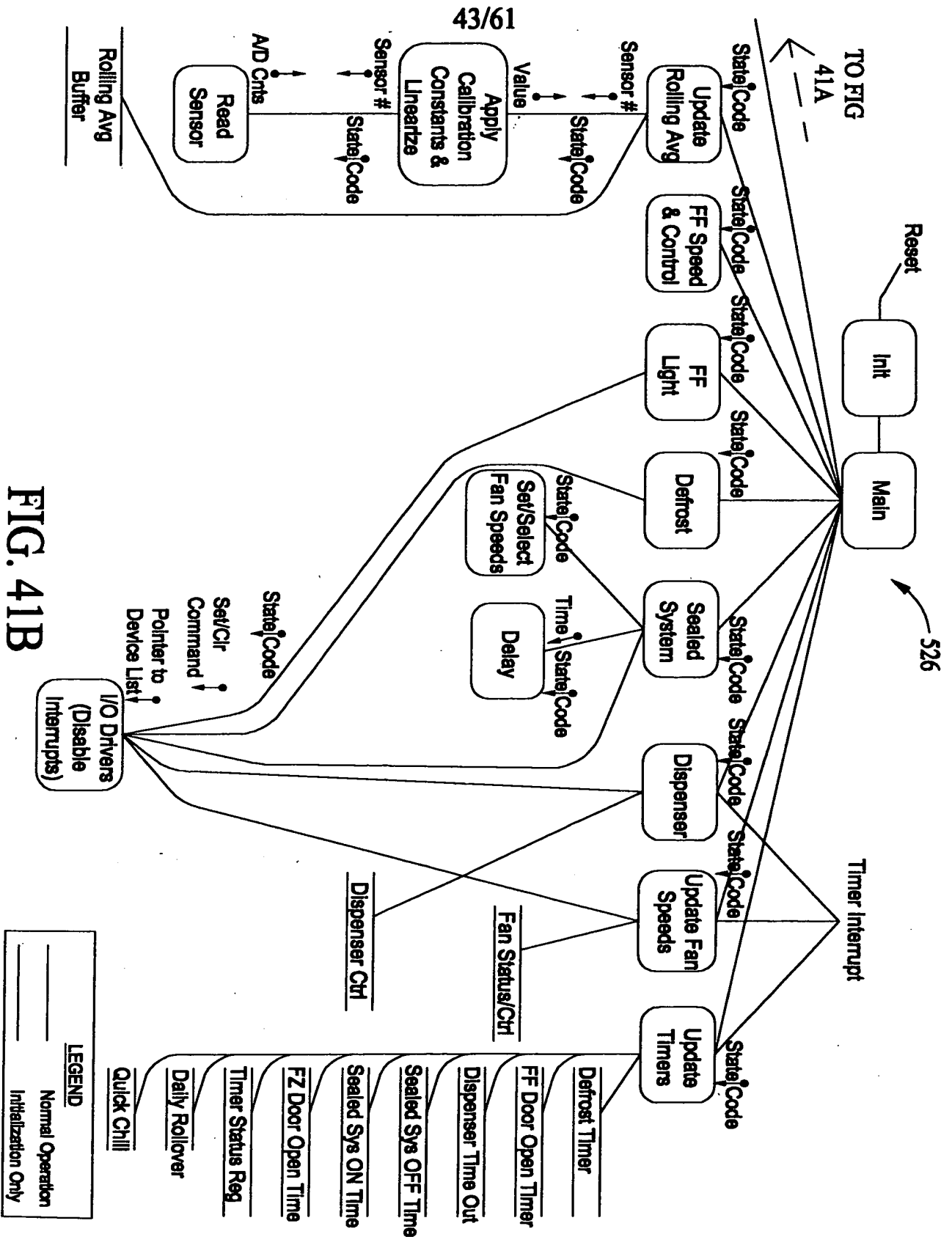
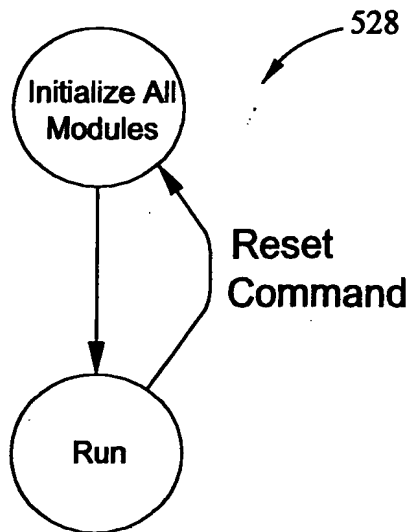


FIG. 41B



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

44/61



State Diagram For Main Control

FIG. 42

HMI MAIN STATE MACHINE

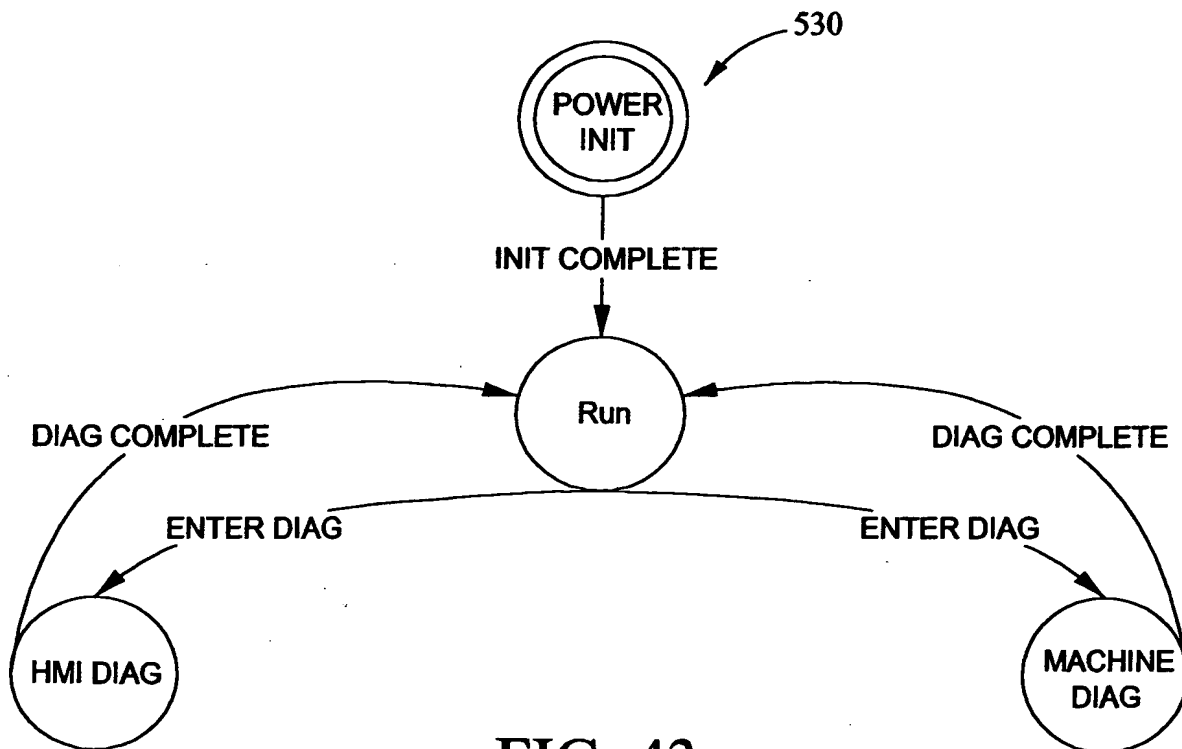
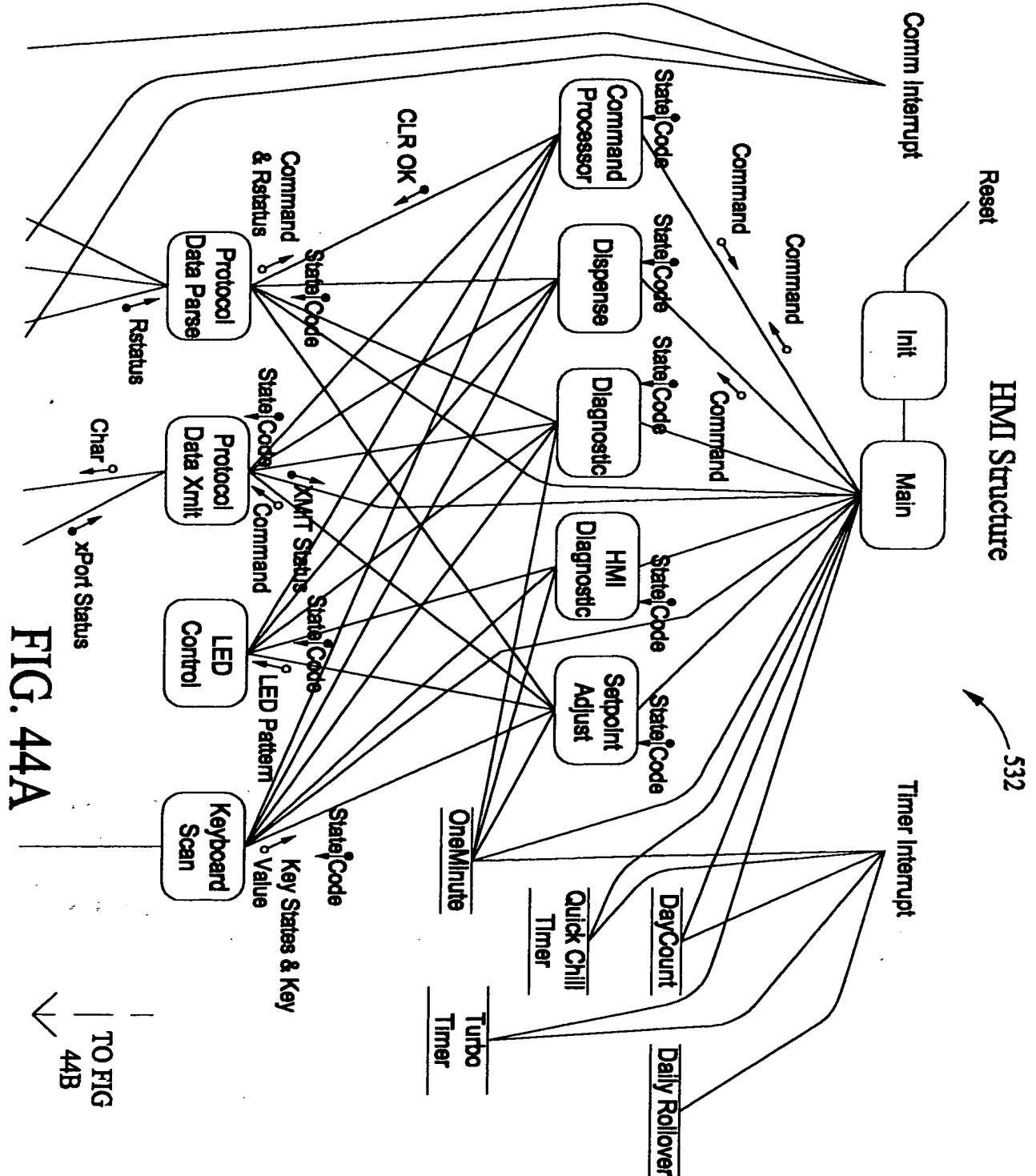


FIG. 43



45/61





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

46/61

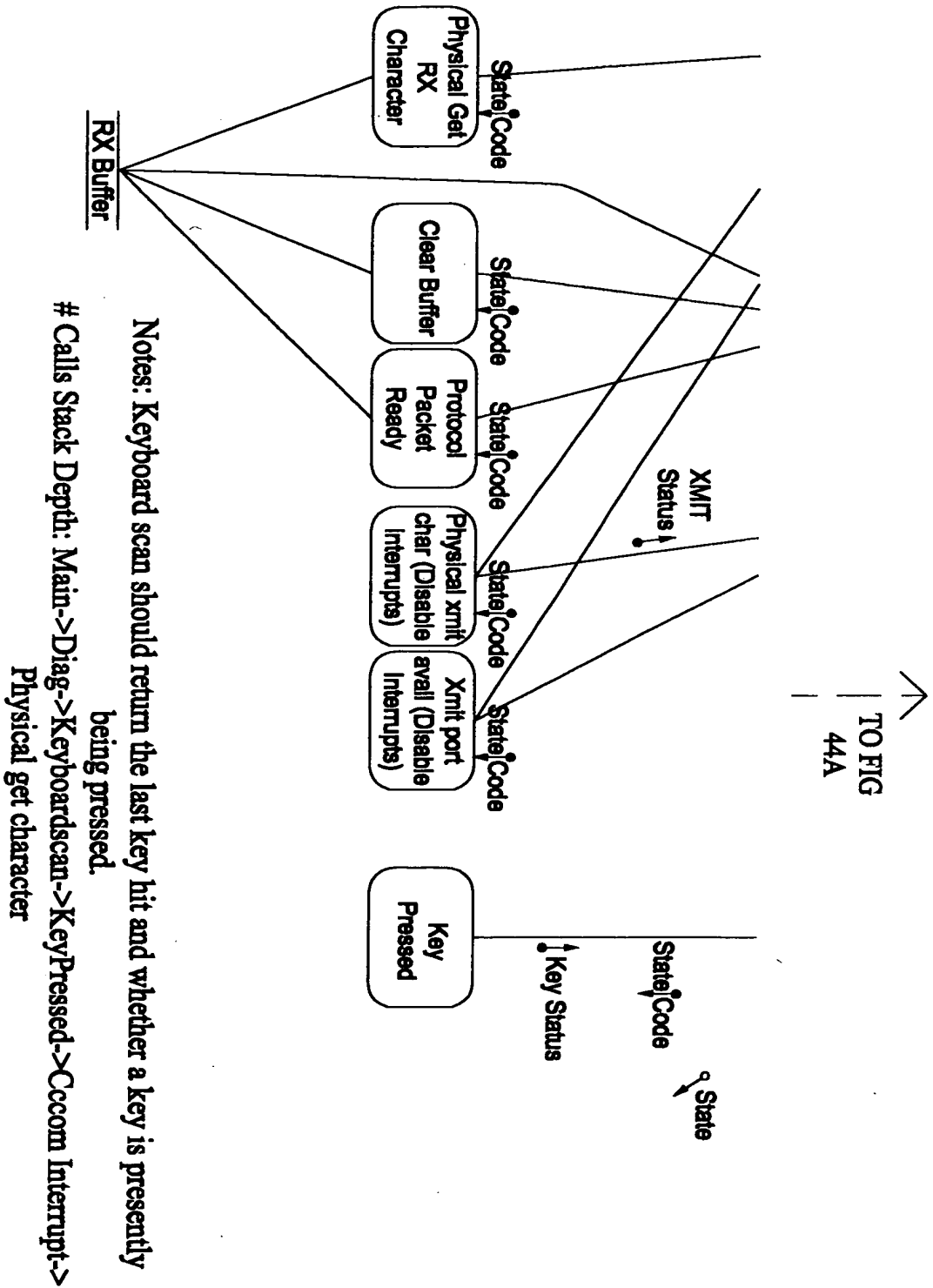
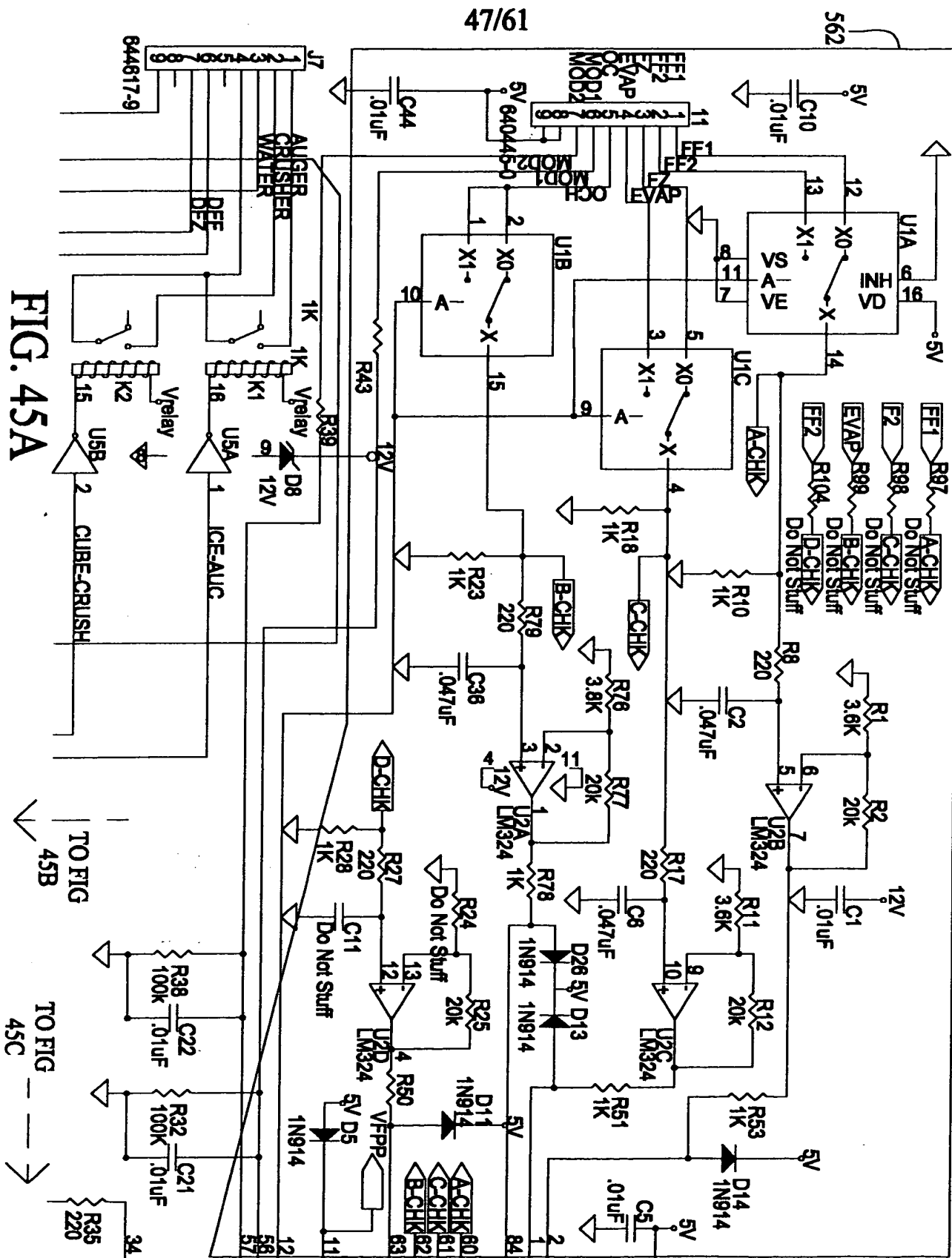


FIG. 44B



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

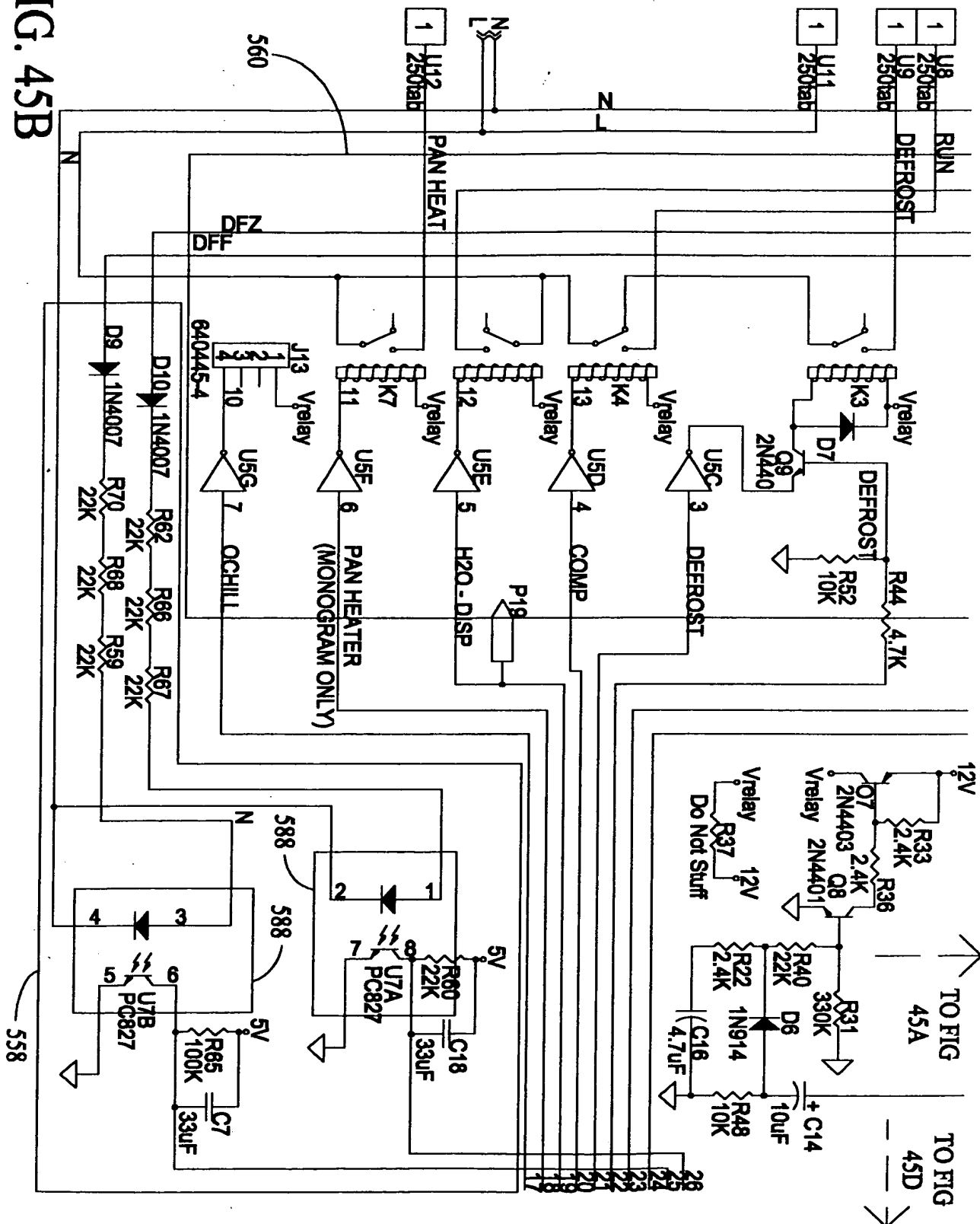




Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

48/61

FIG. 45B



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

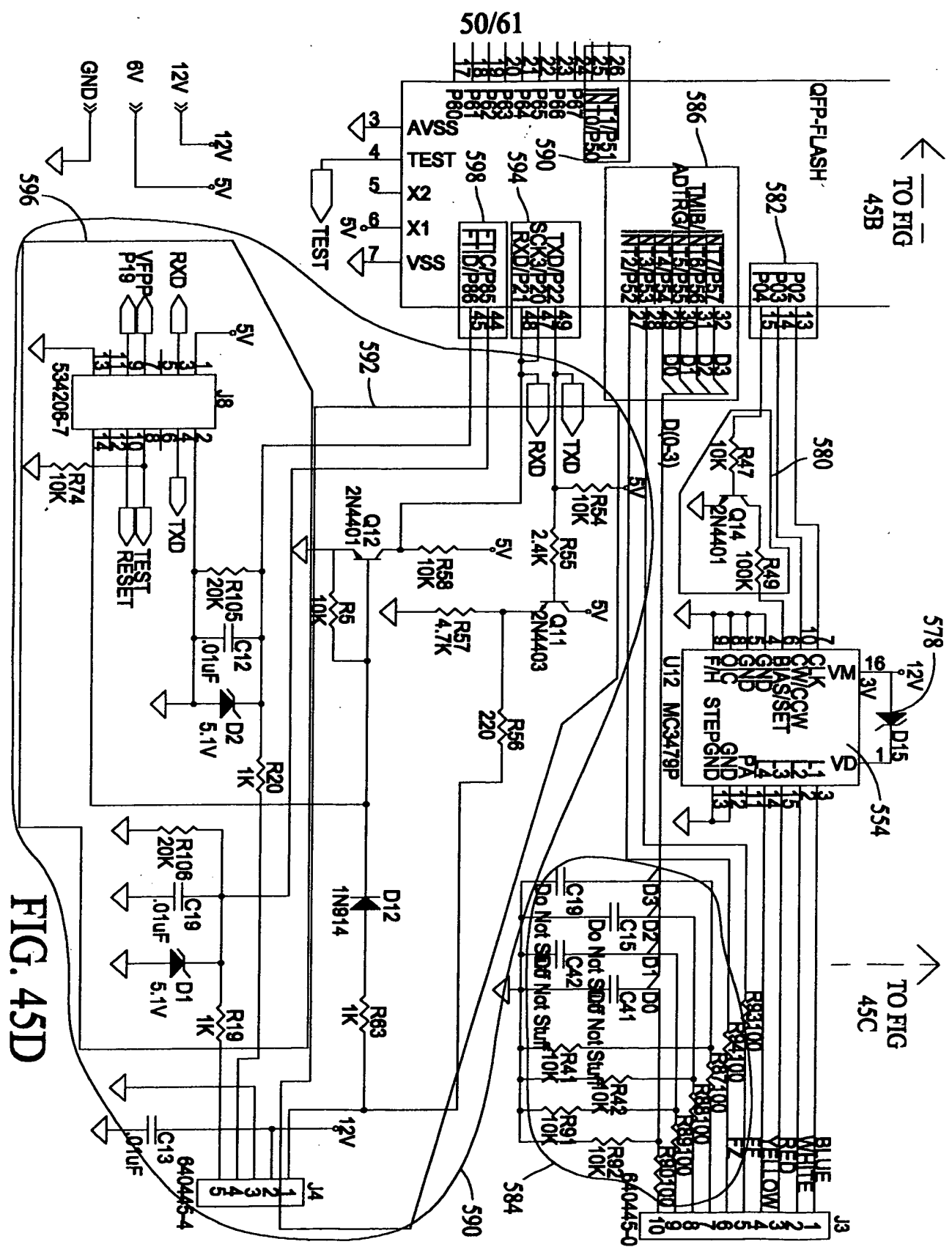


FIG. 45D

Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
 Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
 ELECTRONICS ARCHITECTURE;
 Thomas M. Fisher; ARMSTRONG TEASDALE LLP
 One Metropolitan Square, Suite 2600, St. Louis MO 63102
 (314) 621-5070
 Express Mail No.: EV263879983US

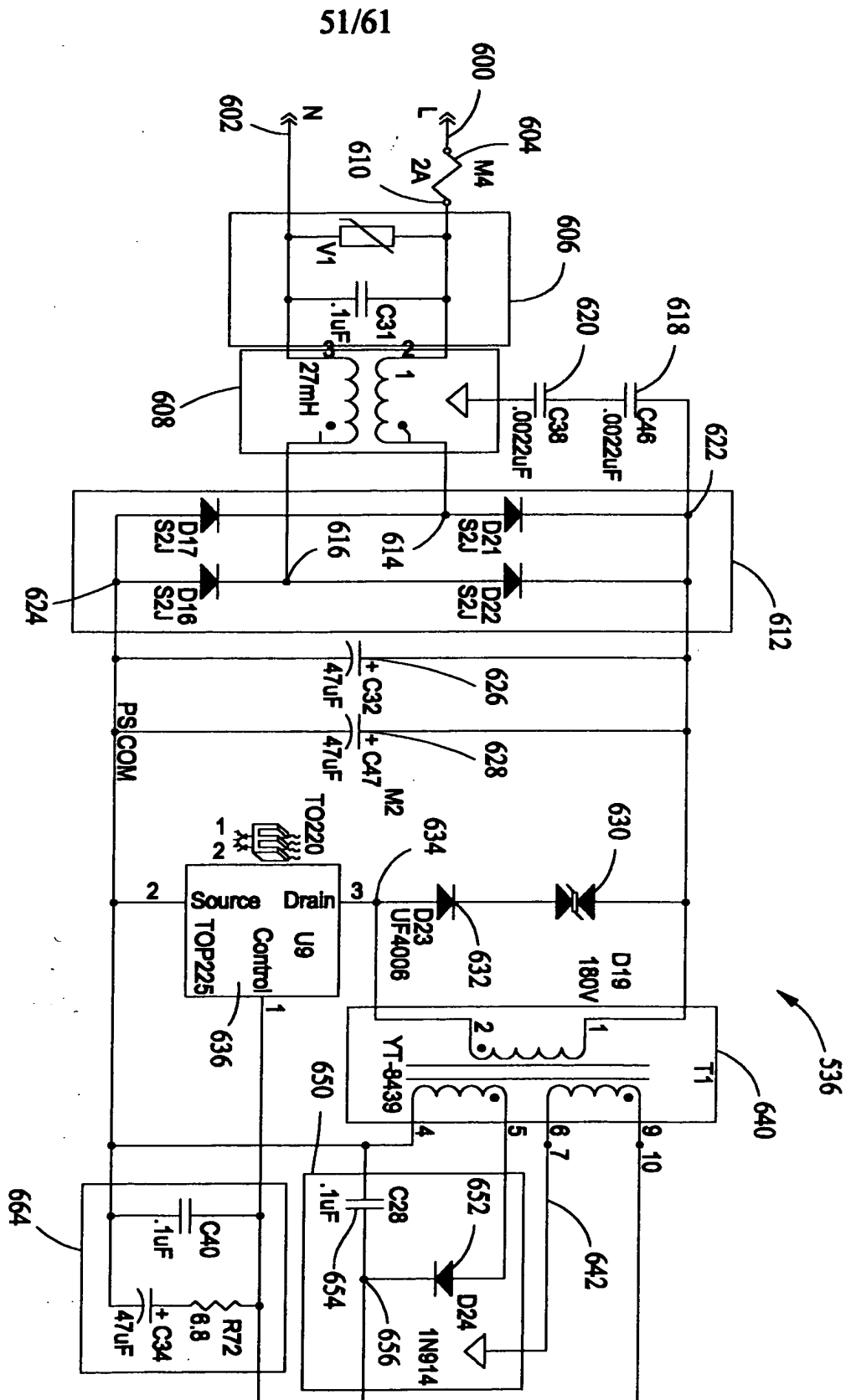


FIG. 45E

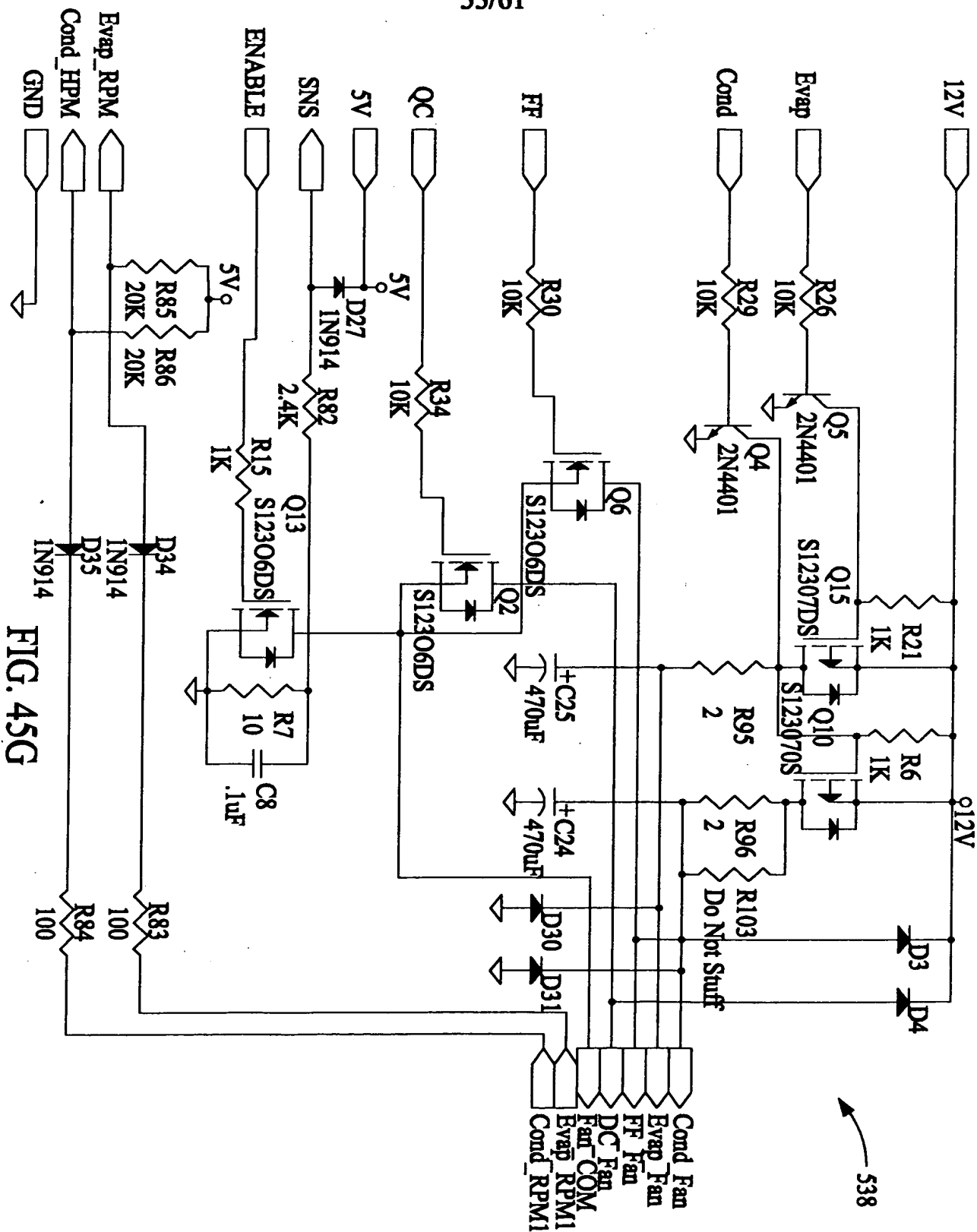
52/61



FIG. 45F



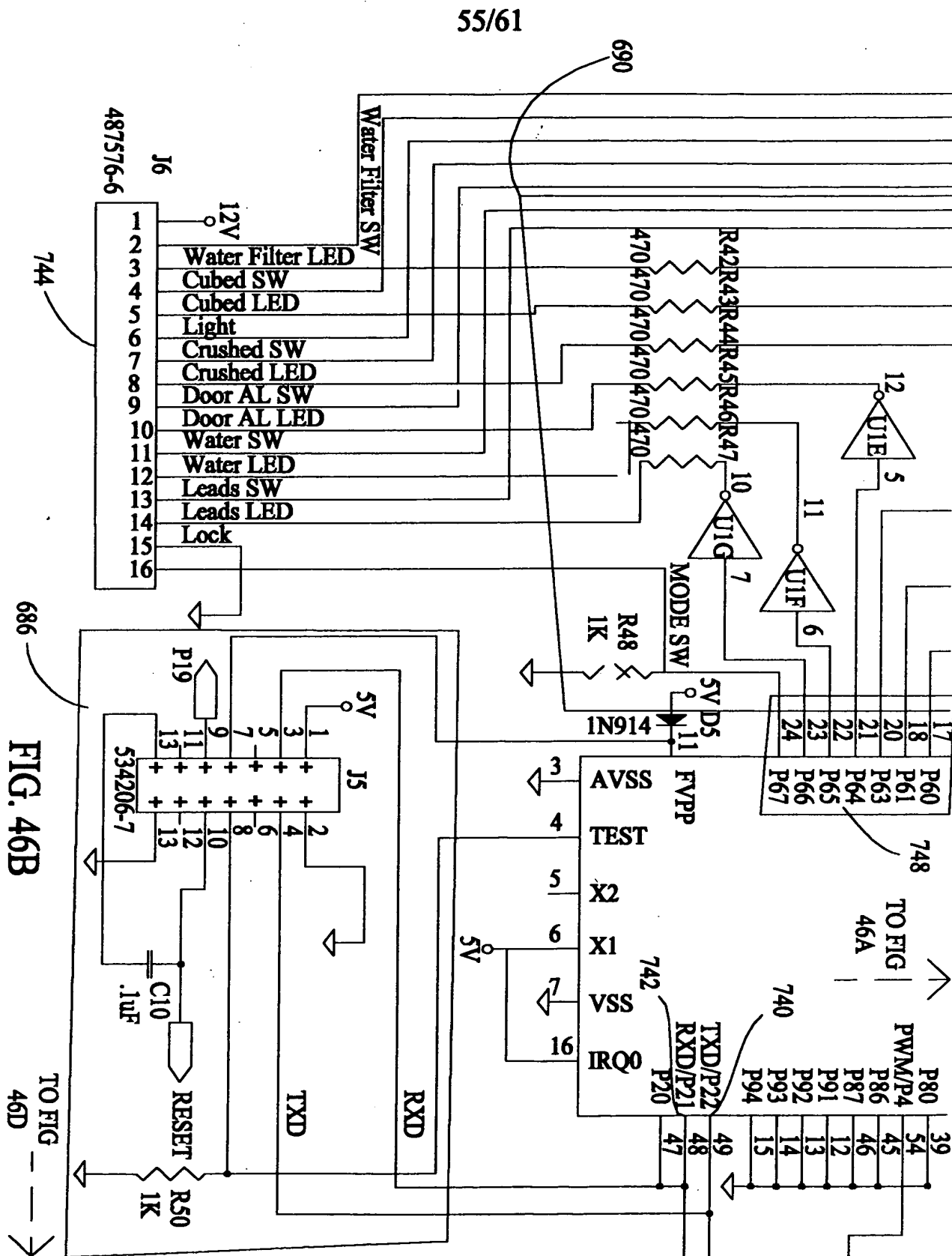
53/61

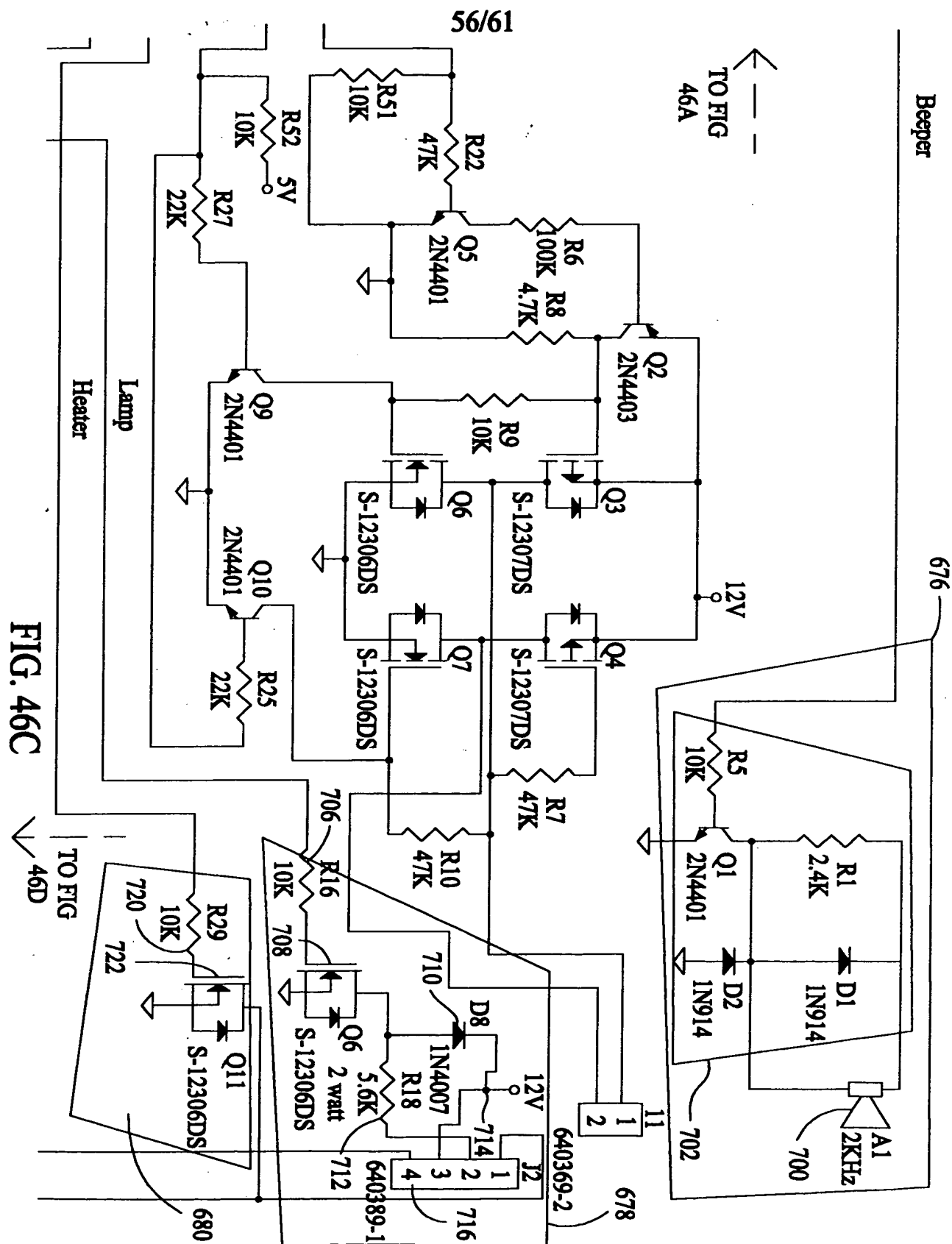
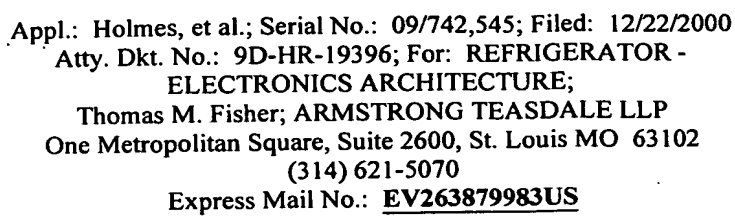


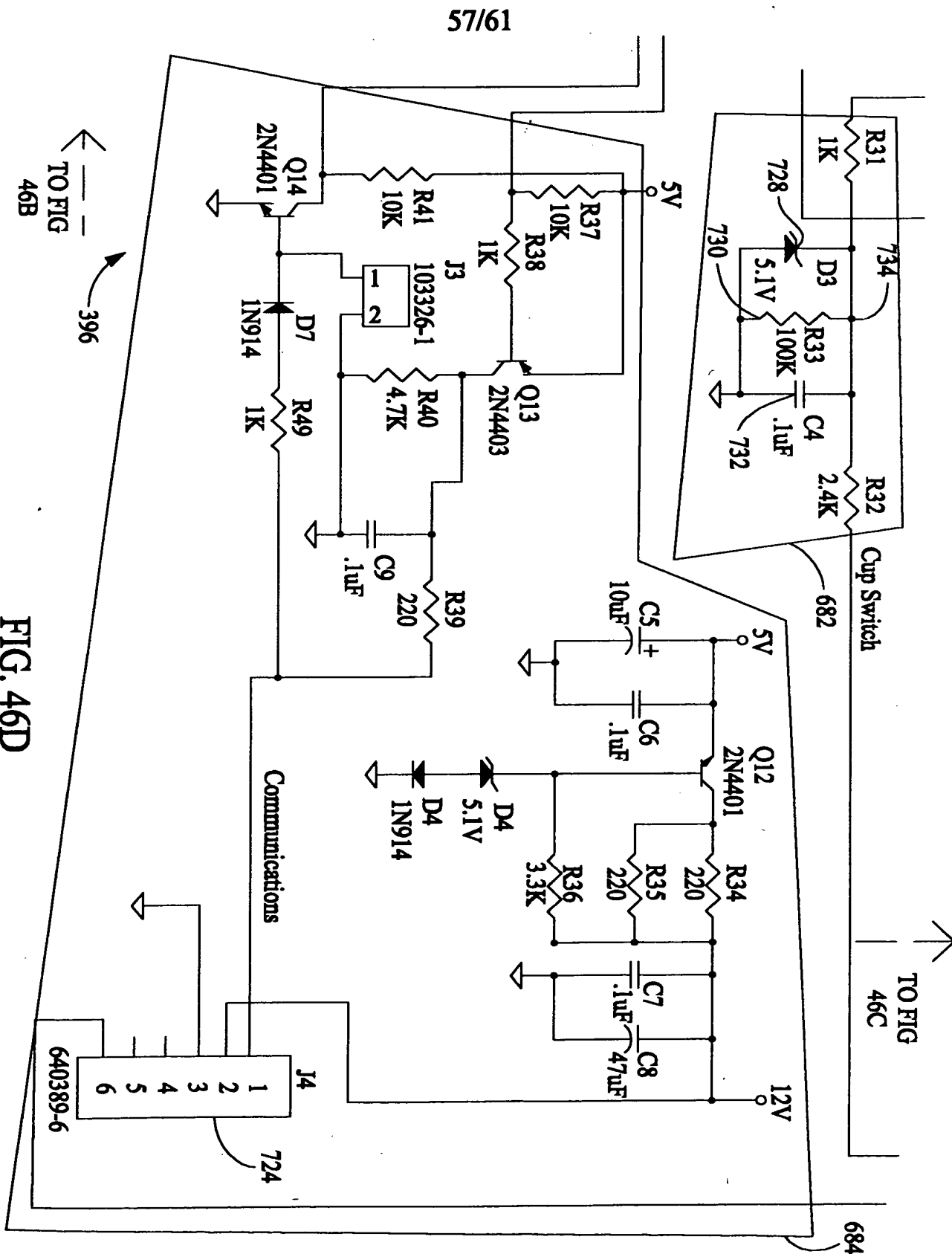




Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US



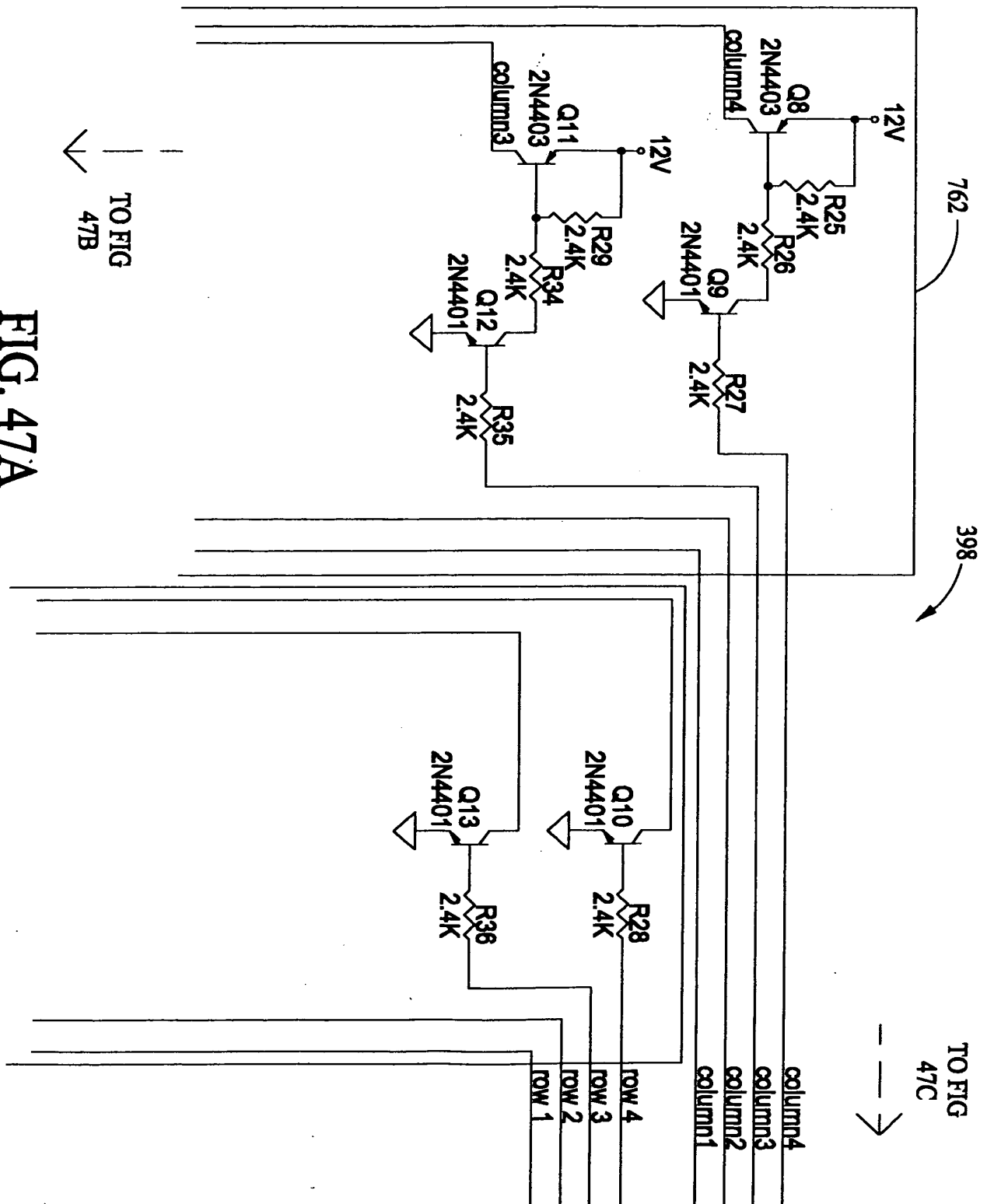






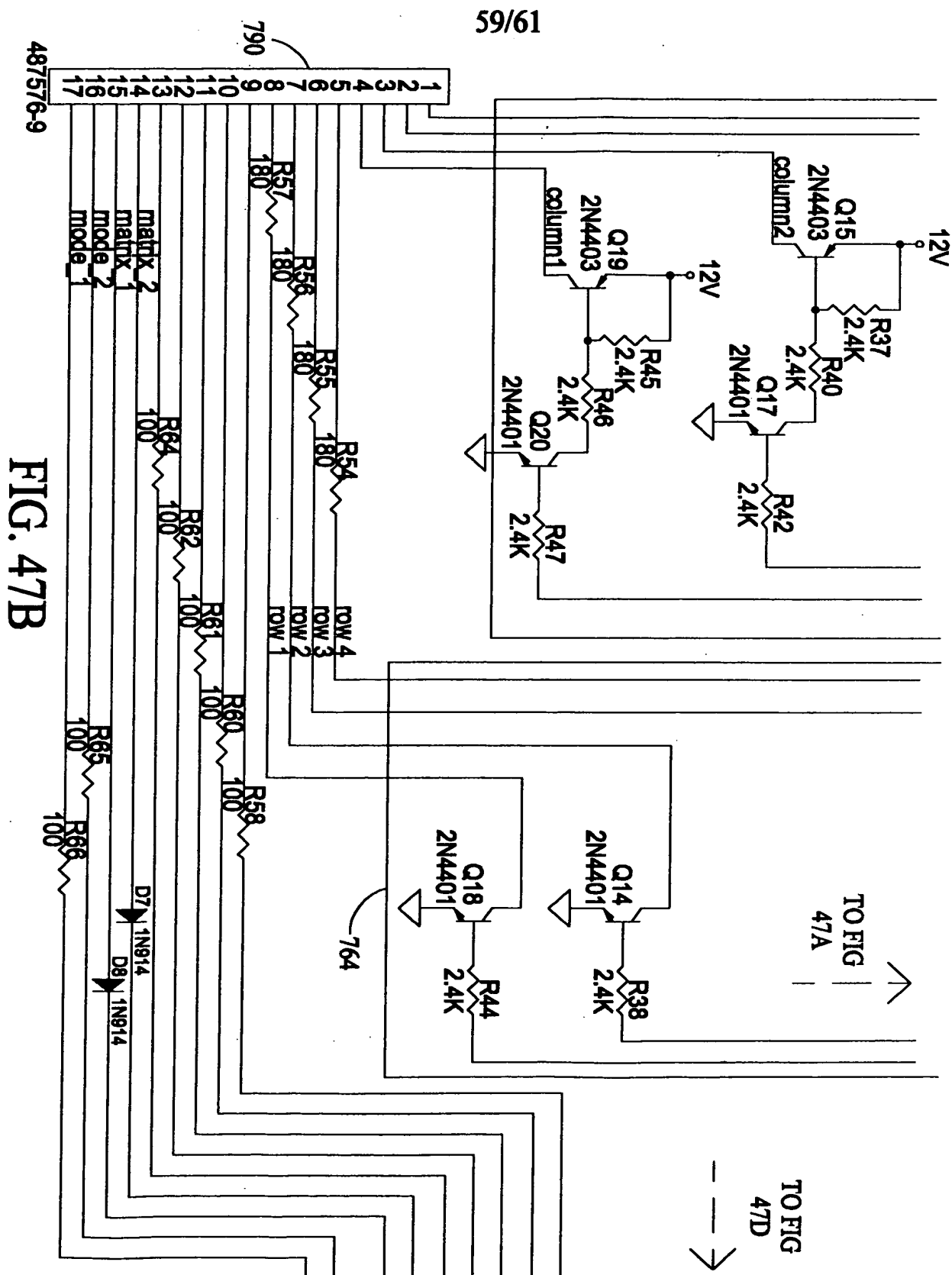
Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

58/61





Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

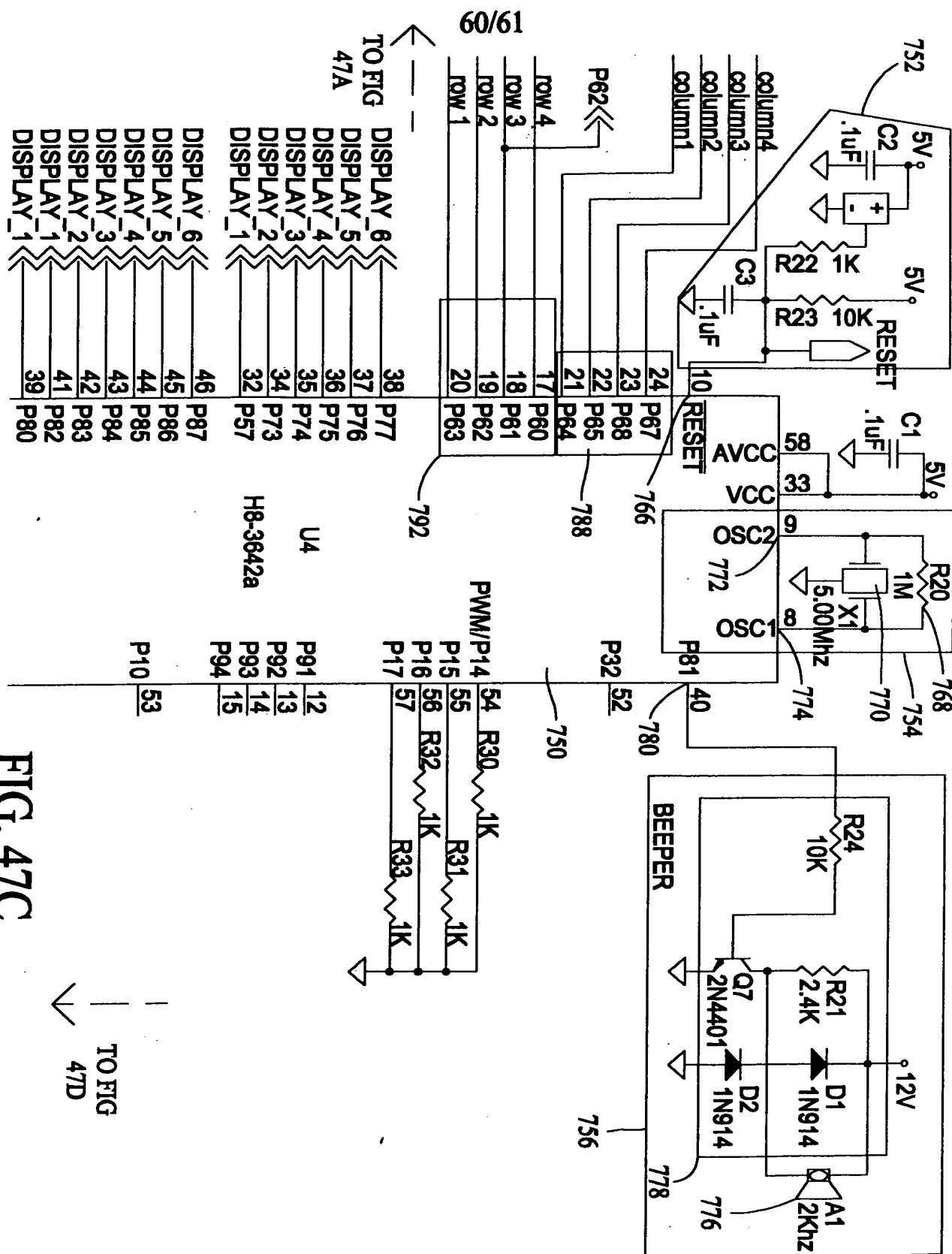
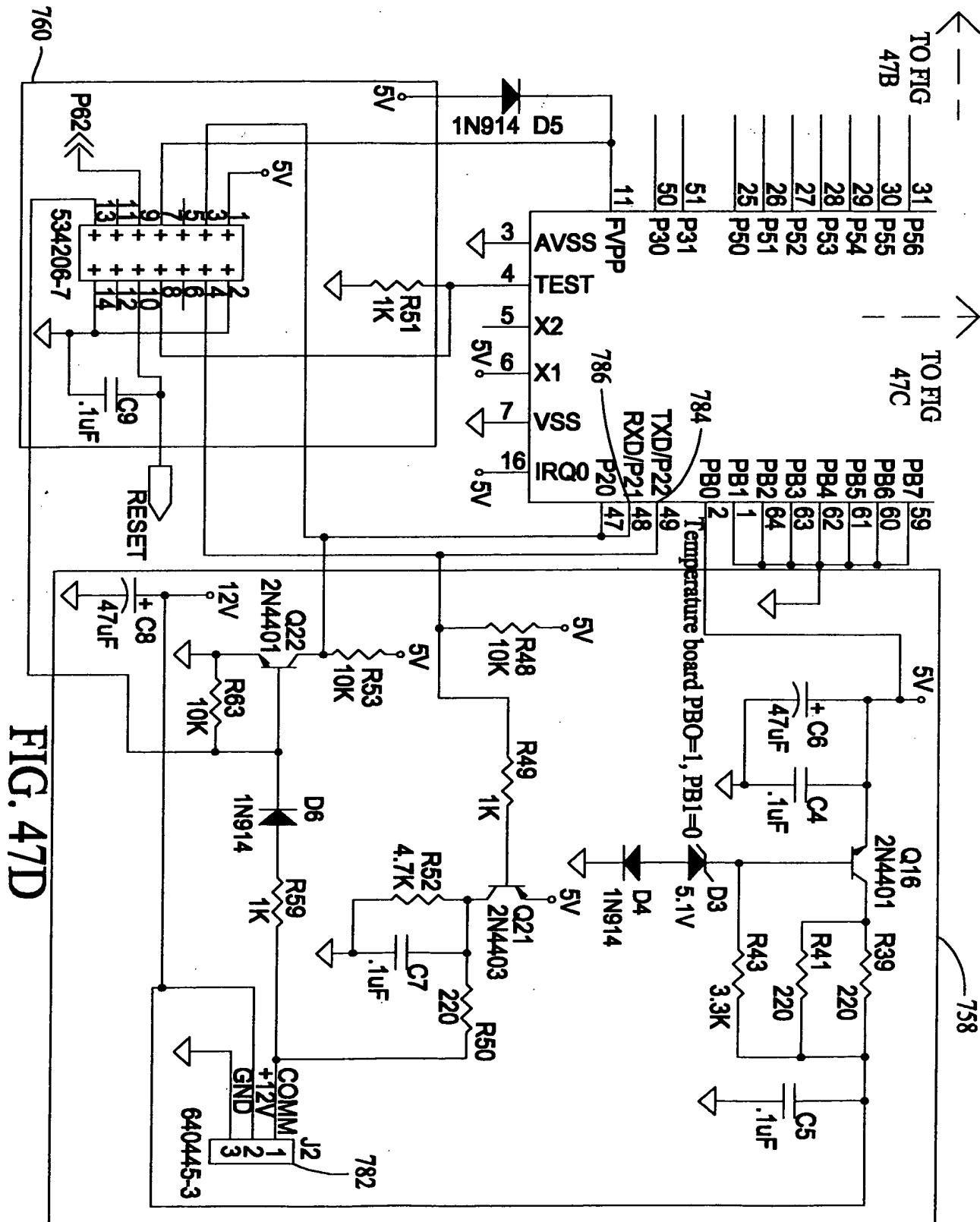


FIG. 47C



Appl.: Holmes, et al.; Serial No.: 09/742,545; Filed: 12/22/2000
Atty. Dkt. No.: 9D-HR-19396; For: REFRIGERATOR -
ELECTRONICS ARCHITECTURE;
Thomas M. Fisher; ARMSTRONG TEASDALE LLP
One Metropolitan Square, Suite 2600, St. Louis MO 63102
(314) 621-5070
Express Mail No.: EV263879983US

61/61



8/45

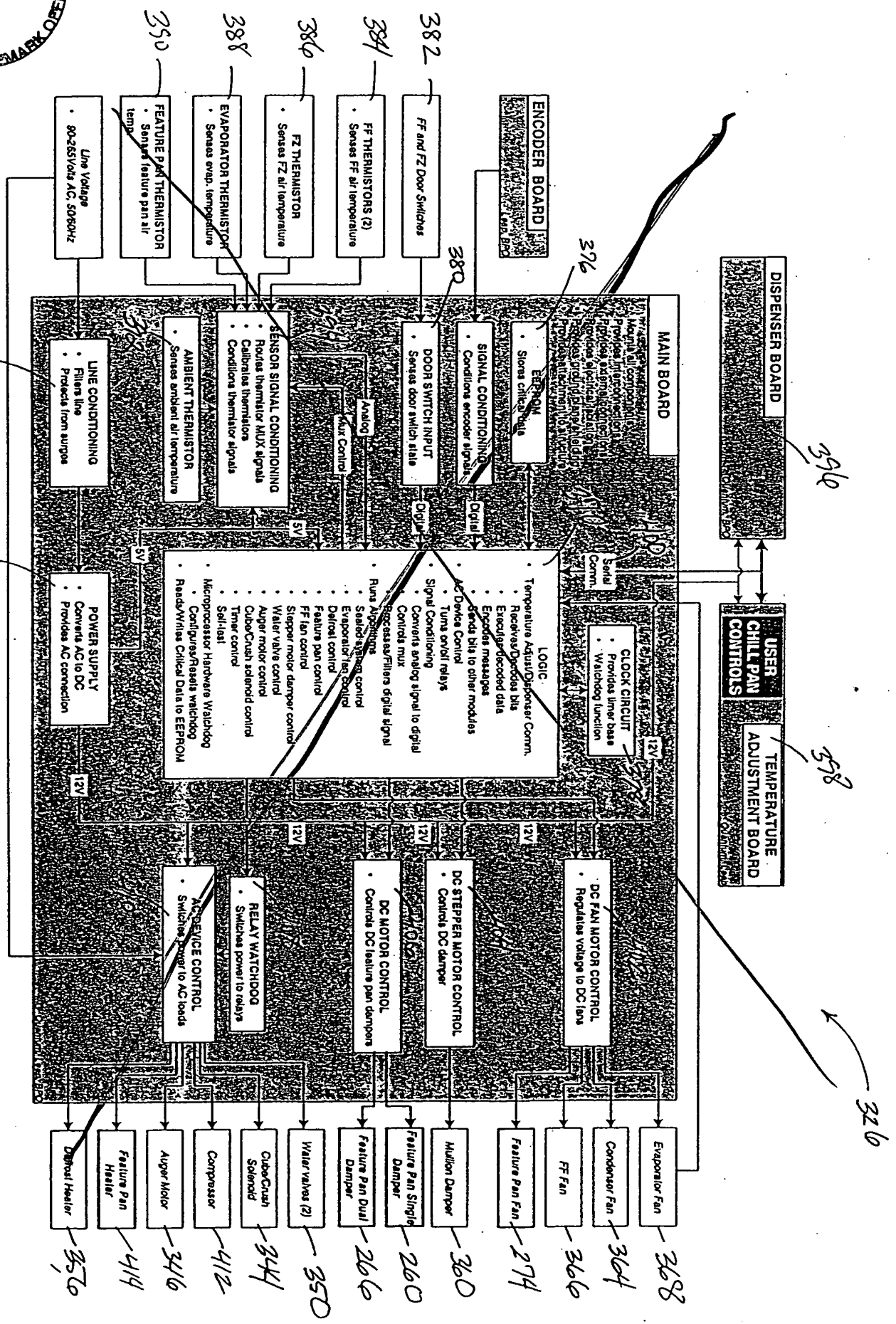


FIG. 9

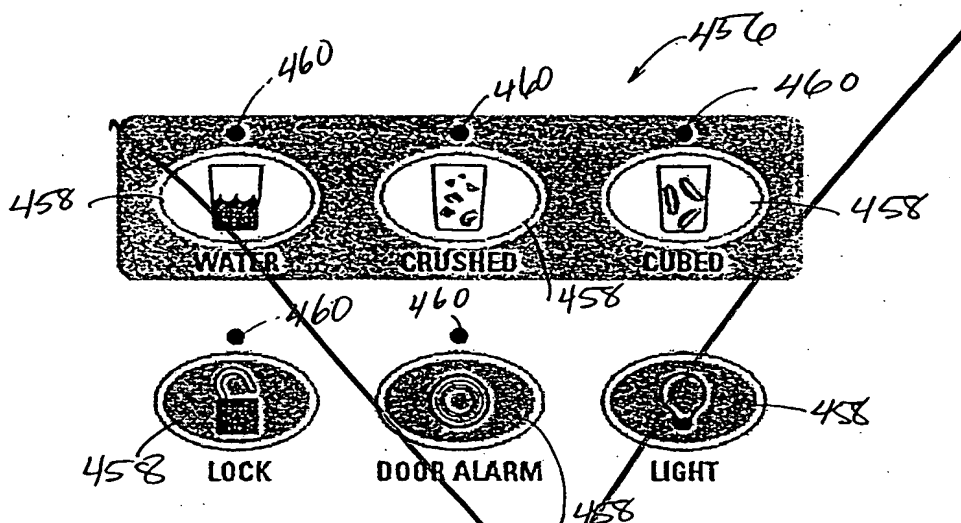


FIG. 15

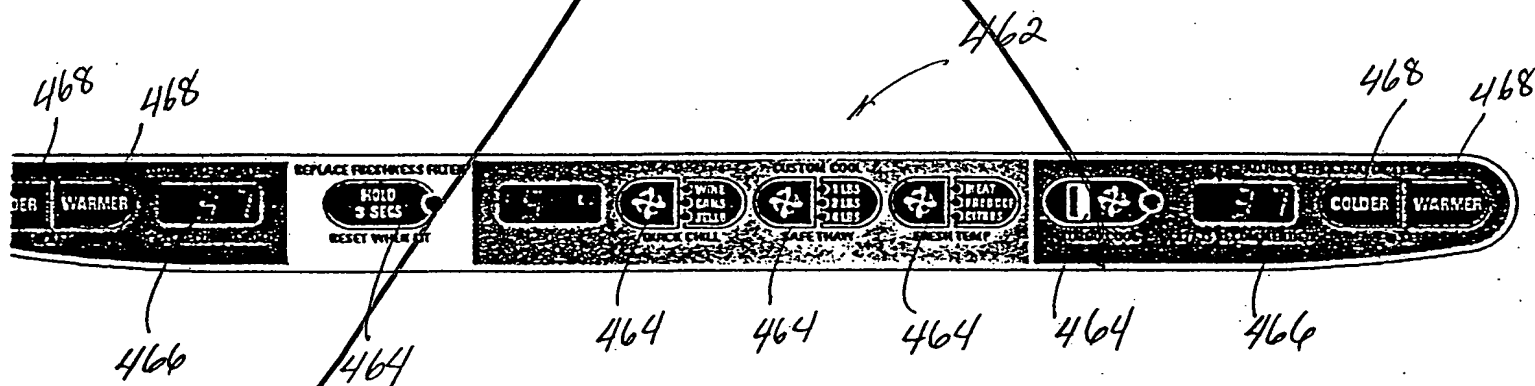


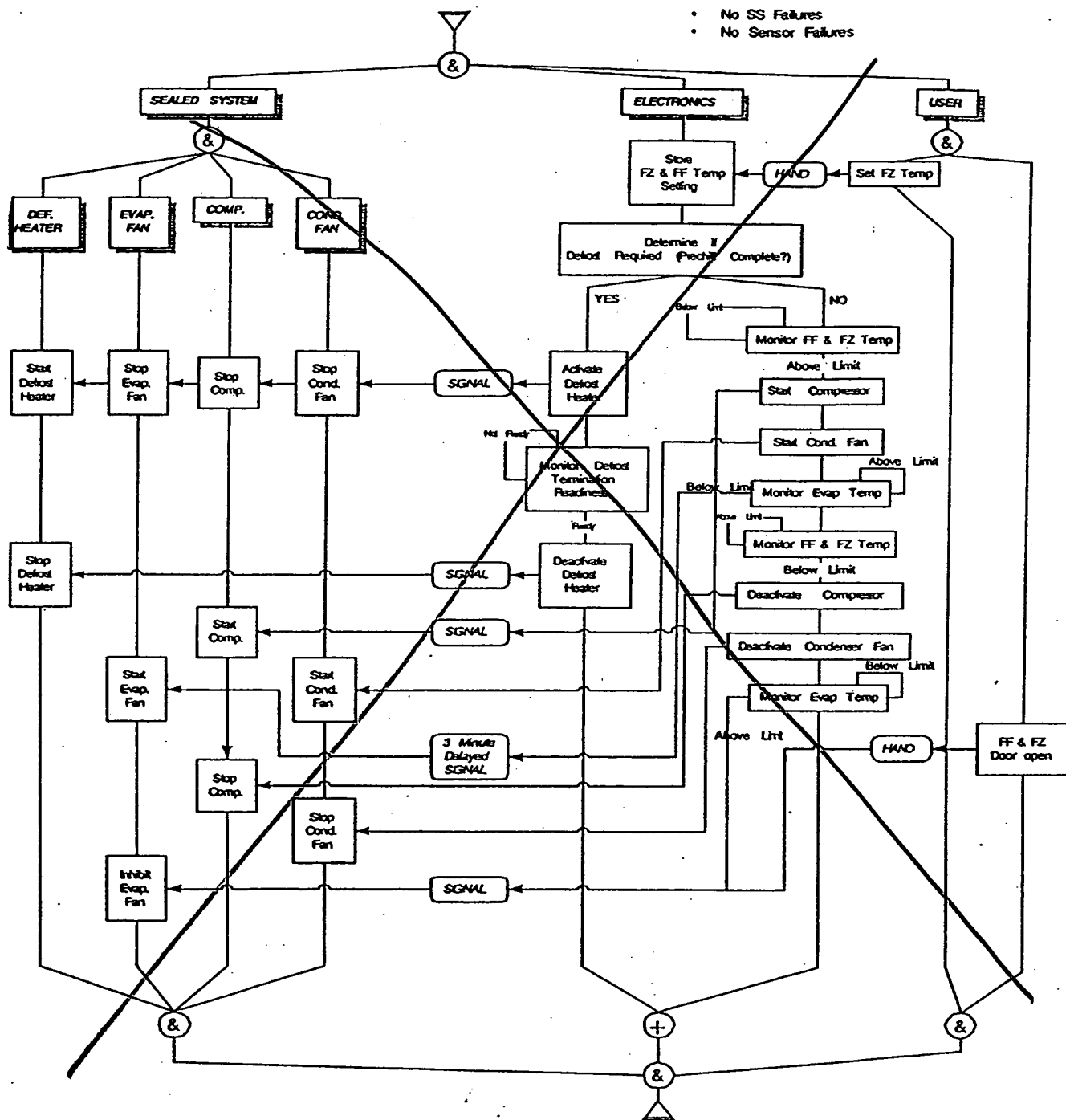
FIG. 16

480

16/45

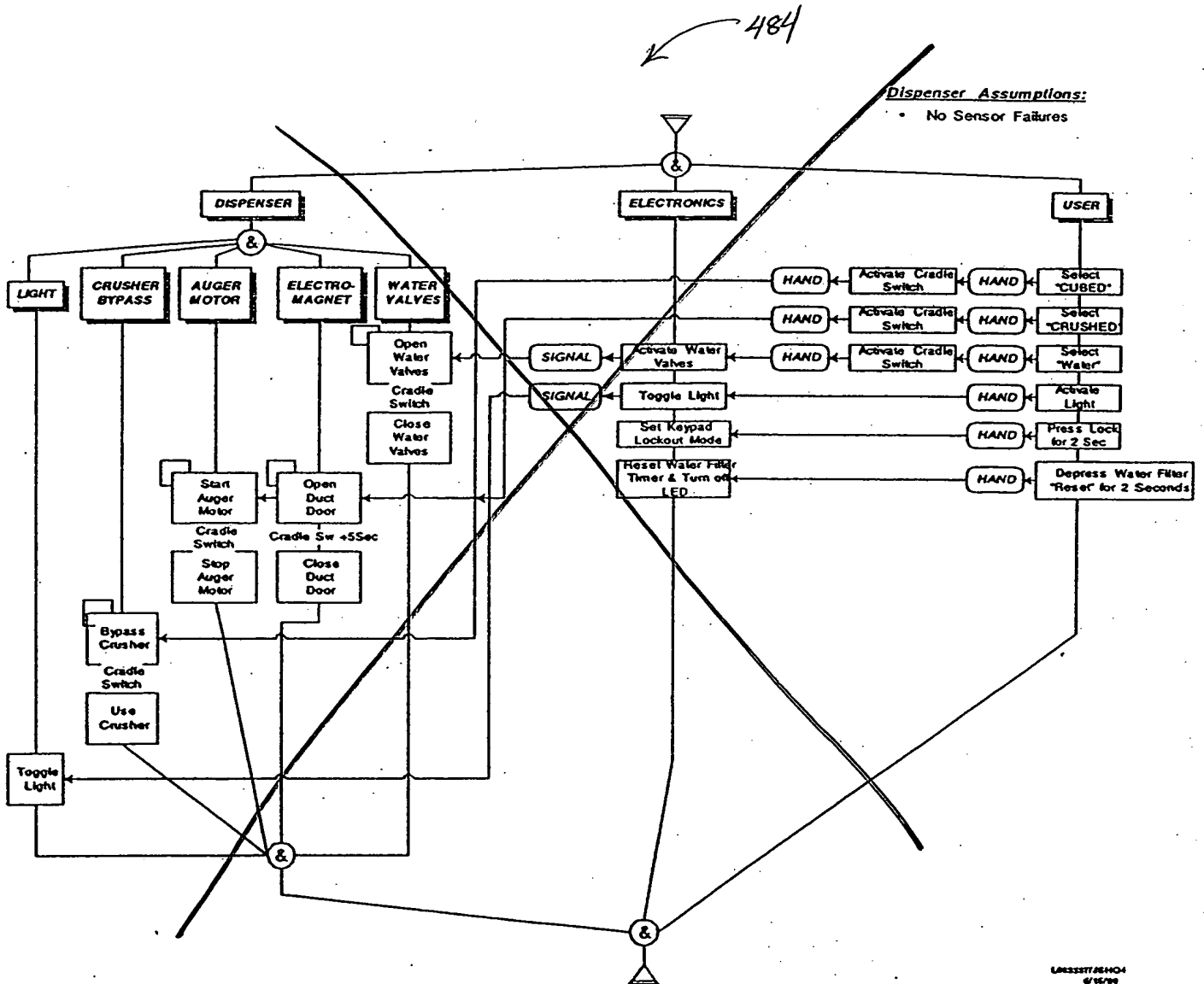
Sealed System Assumptions:

- No SS Failures
- No Sensor Failures

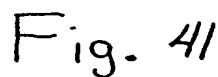


Sealed System Behavior Diagram

Fig 18

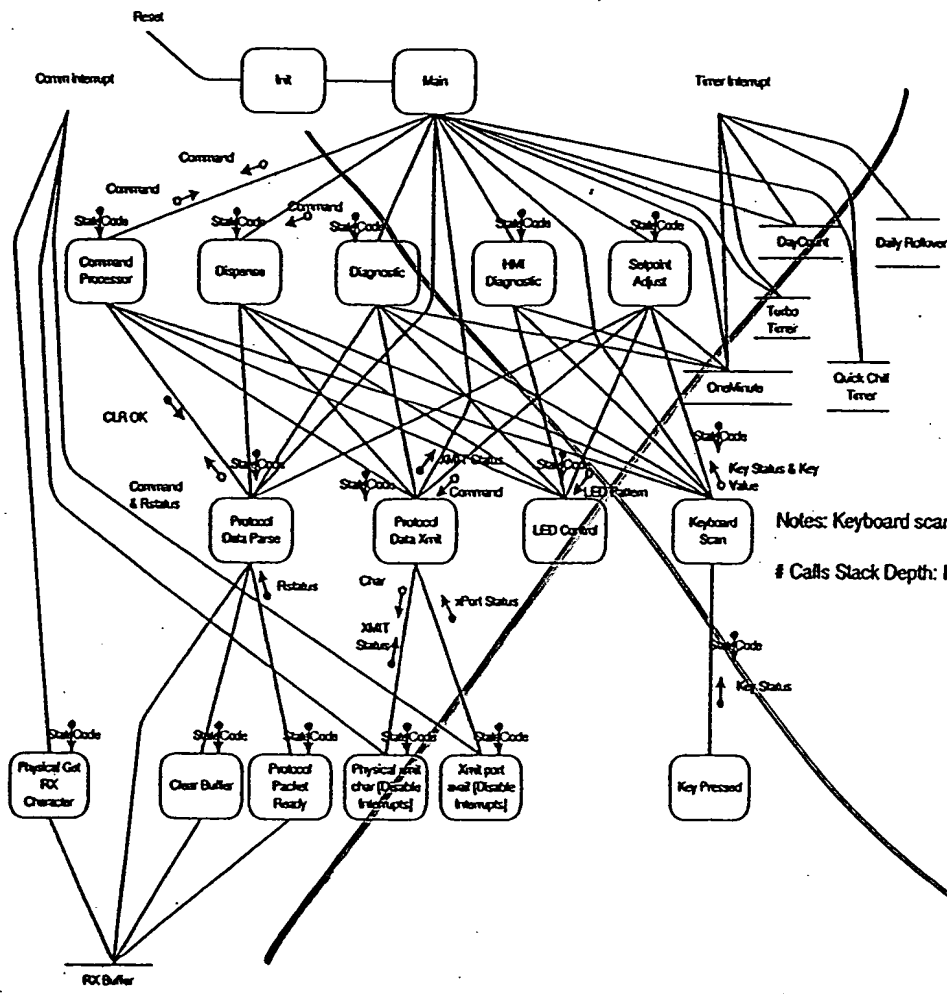


Dispenser Behavior



HMI Structure

532



Notes: Keyboard scan should return the last key hit and whether a key is presently being pressed.
 # Calls Stack Depth: Main->Diag->Keyboardscan-> KeyPressed->Com Interrupt-> Physical get character

Fig. 44

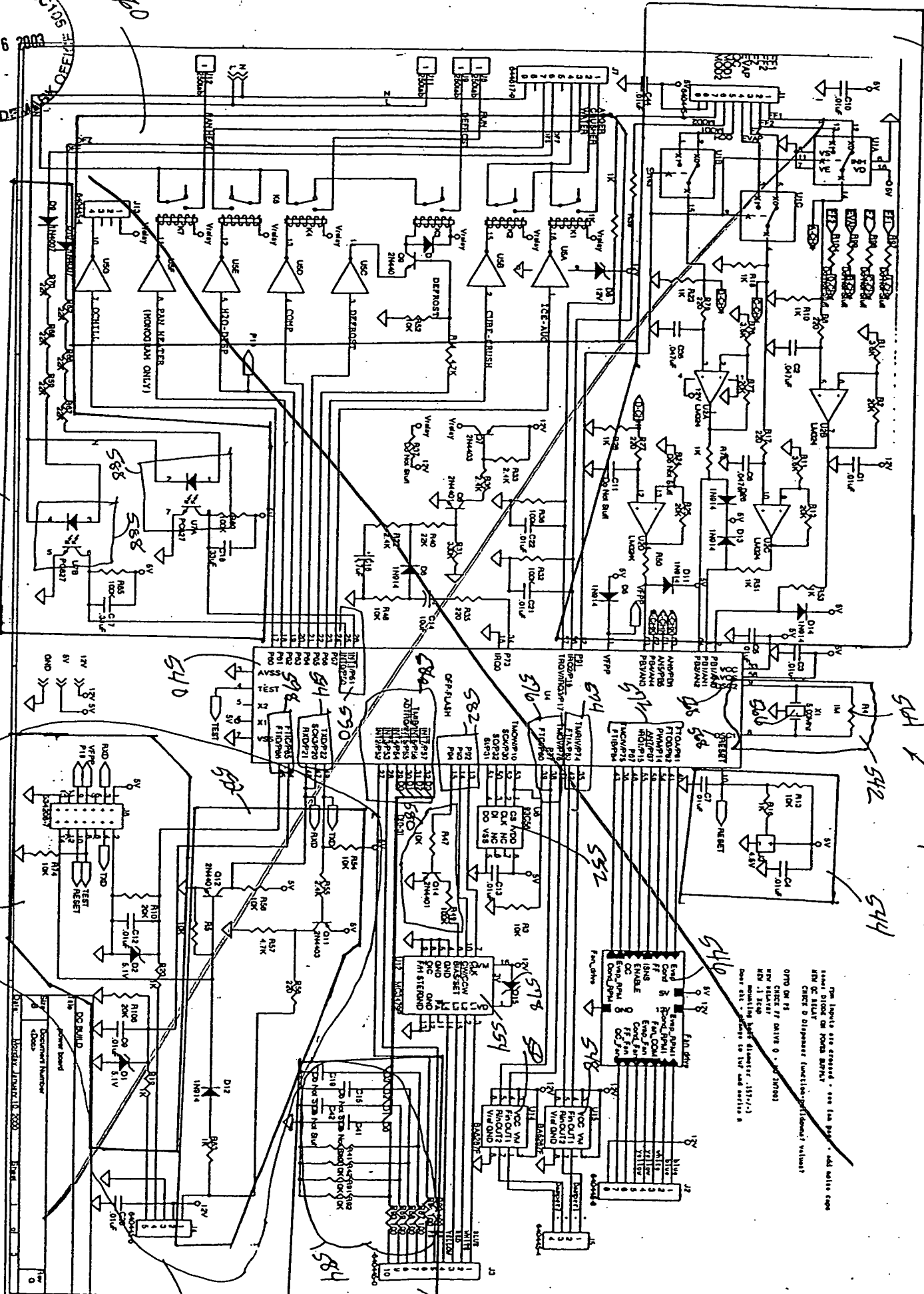
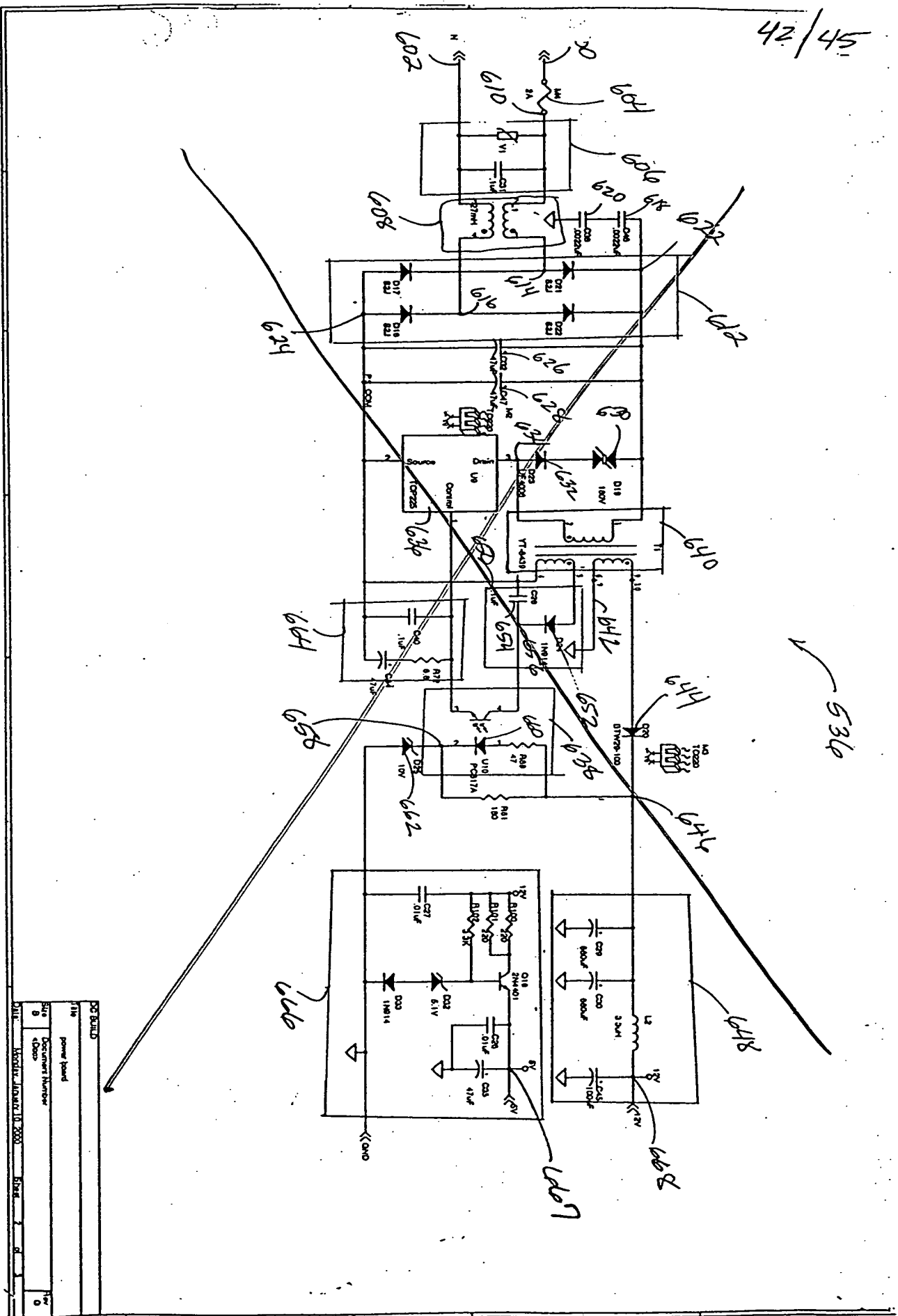


FIGURE 4/5

42/45

FIGURE 45



DC BUILD			
116	power board		
Size	Document Number		
8	4000		
Unit	Model	Amount	Boxed
		1	0

OIPE JC106
 JAN 16 2003
 PATENT & TRADEMARK

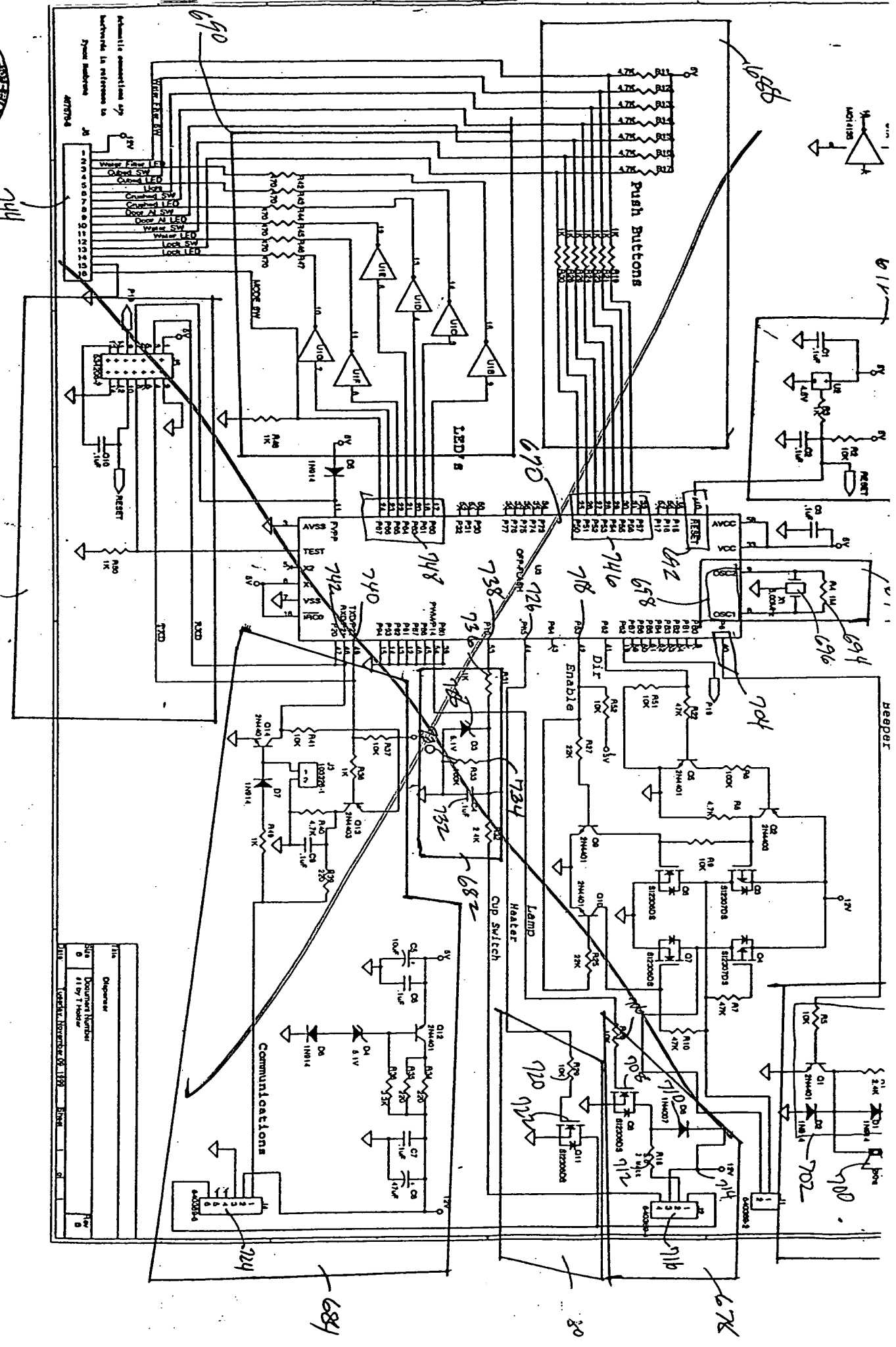
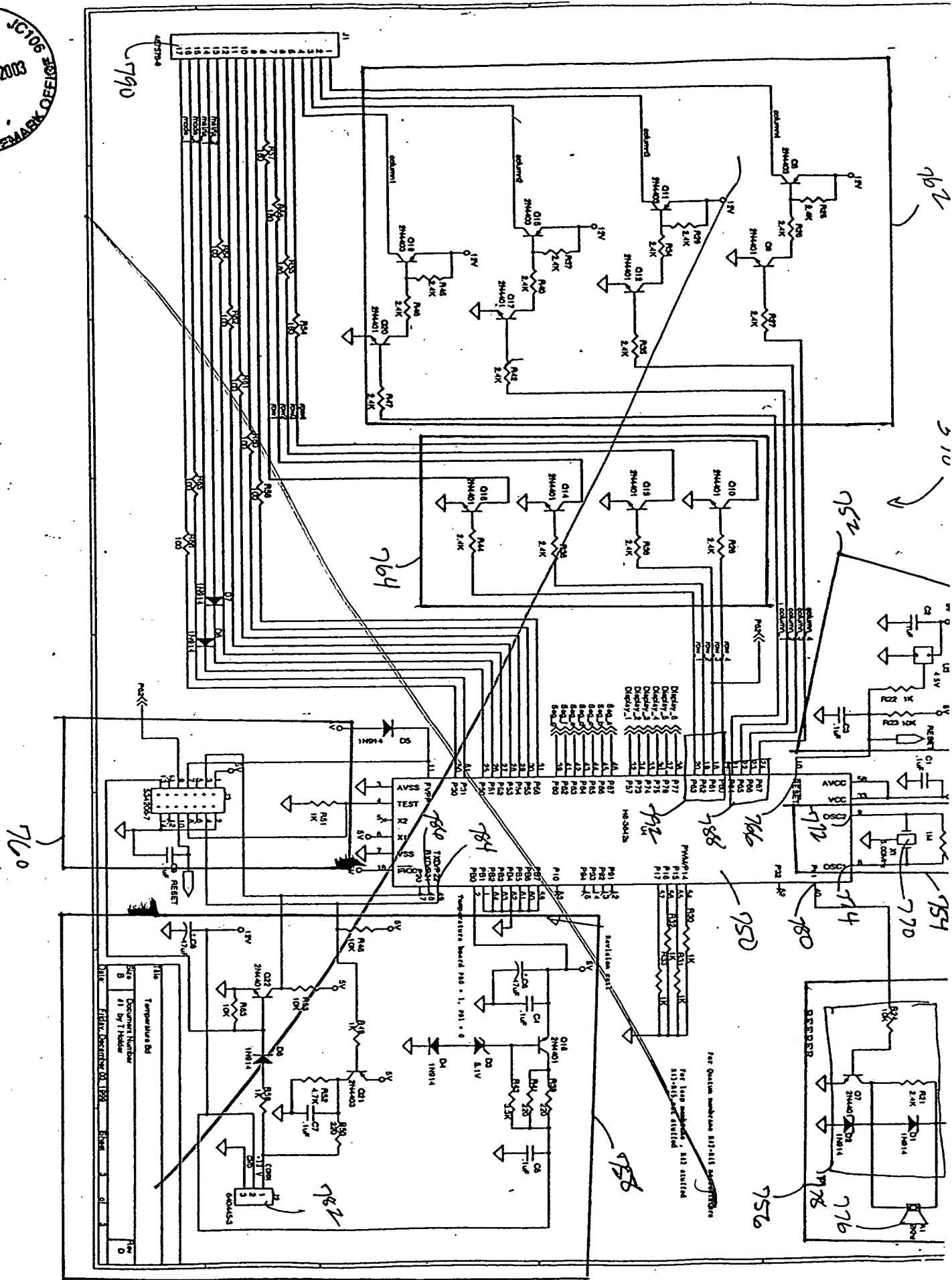


FIGURE 46

44/45



57/57

8/61

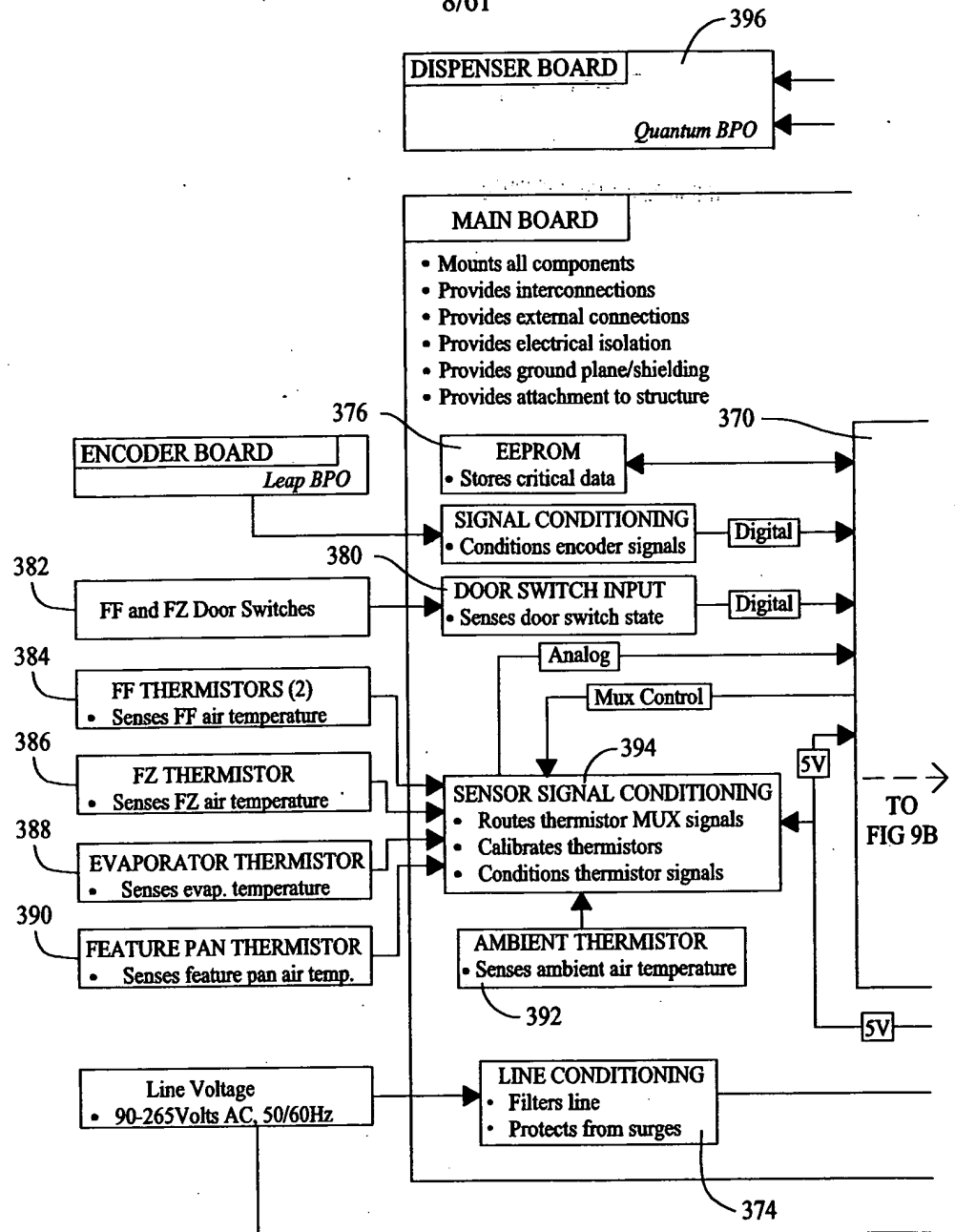
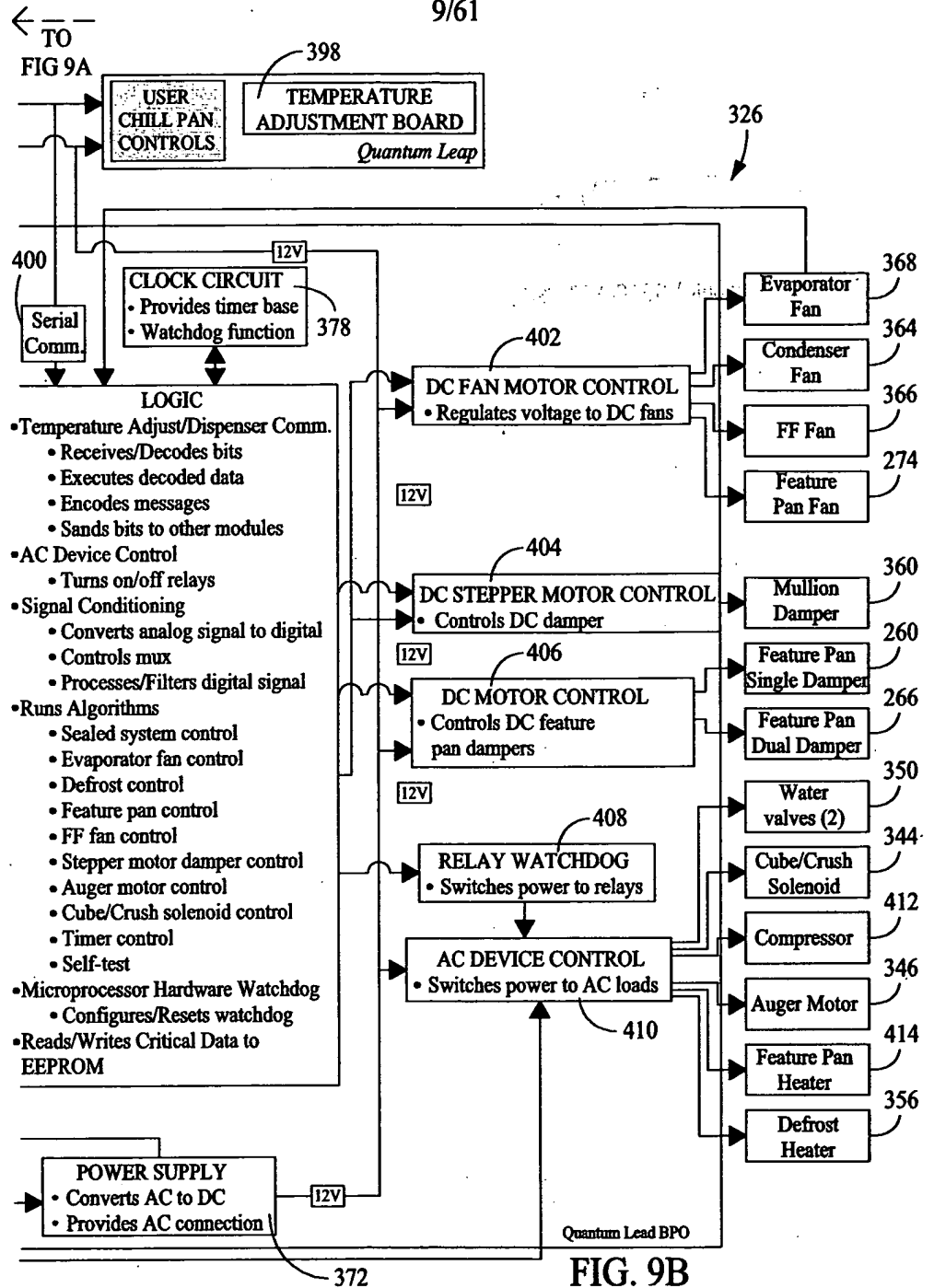
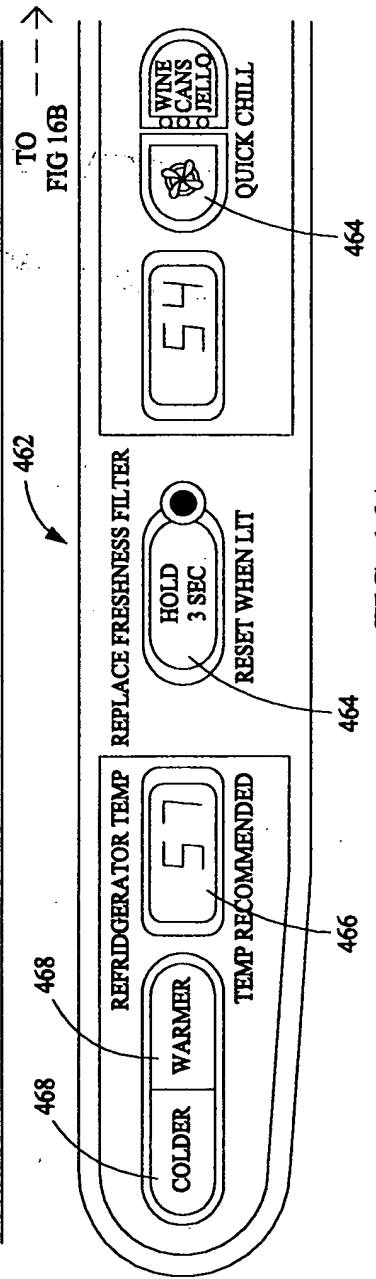
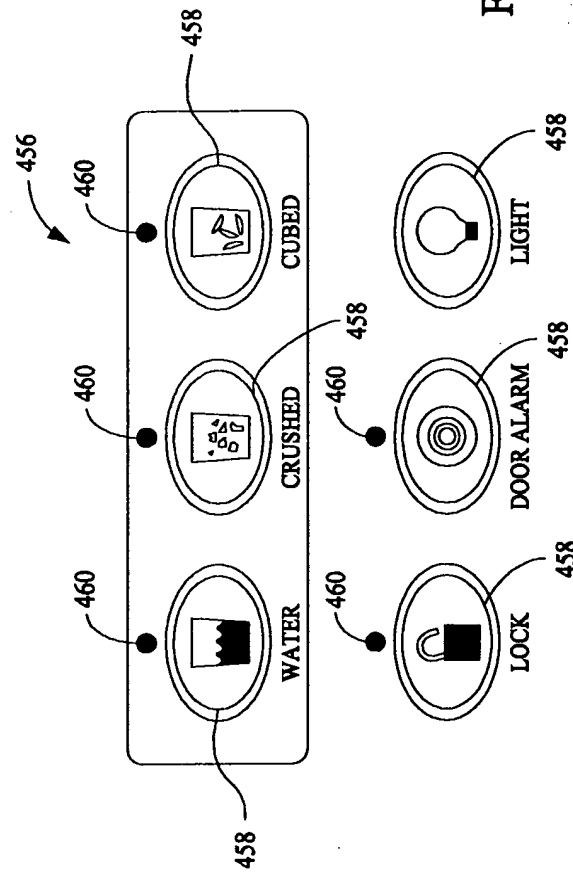


FIG. 9A

9/61





TO
FIG 16B
→

TRADEMARK
JAN 16 2003

16/61

TO
FIG. 16A

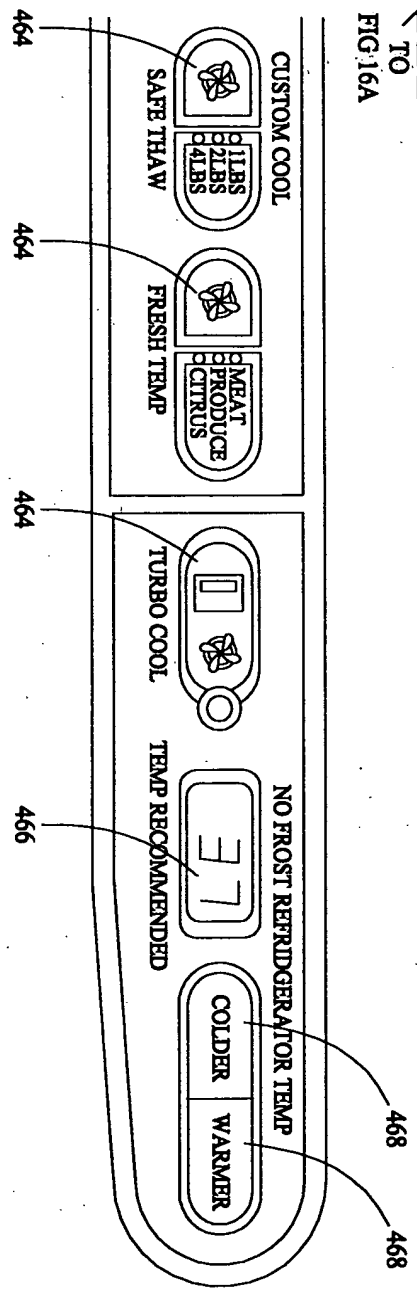
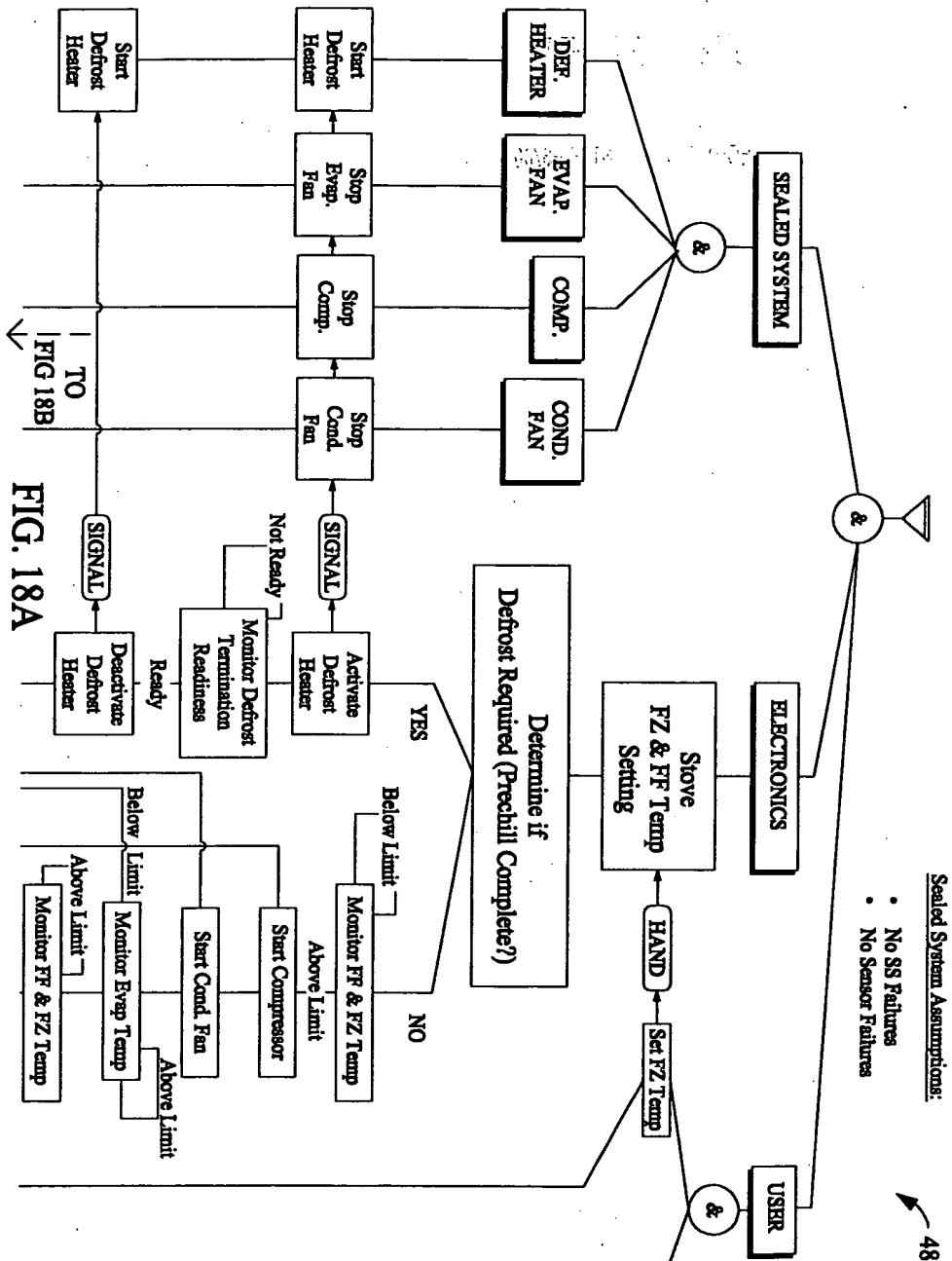


FIG. 16B

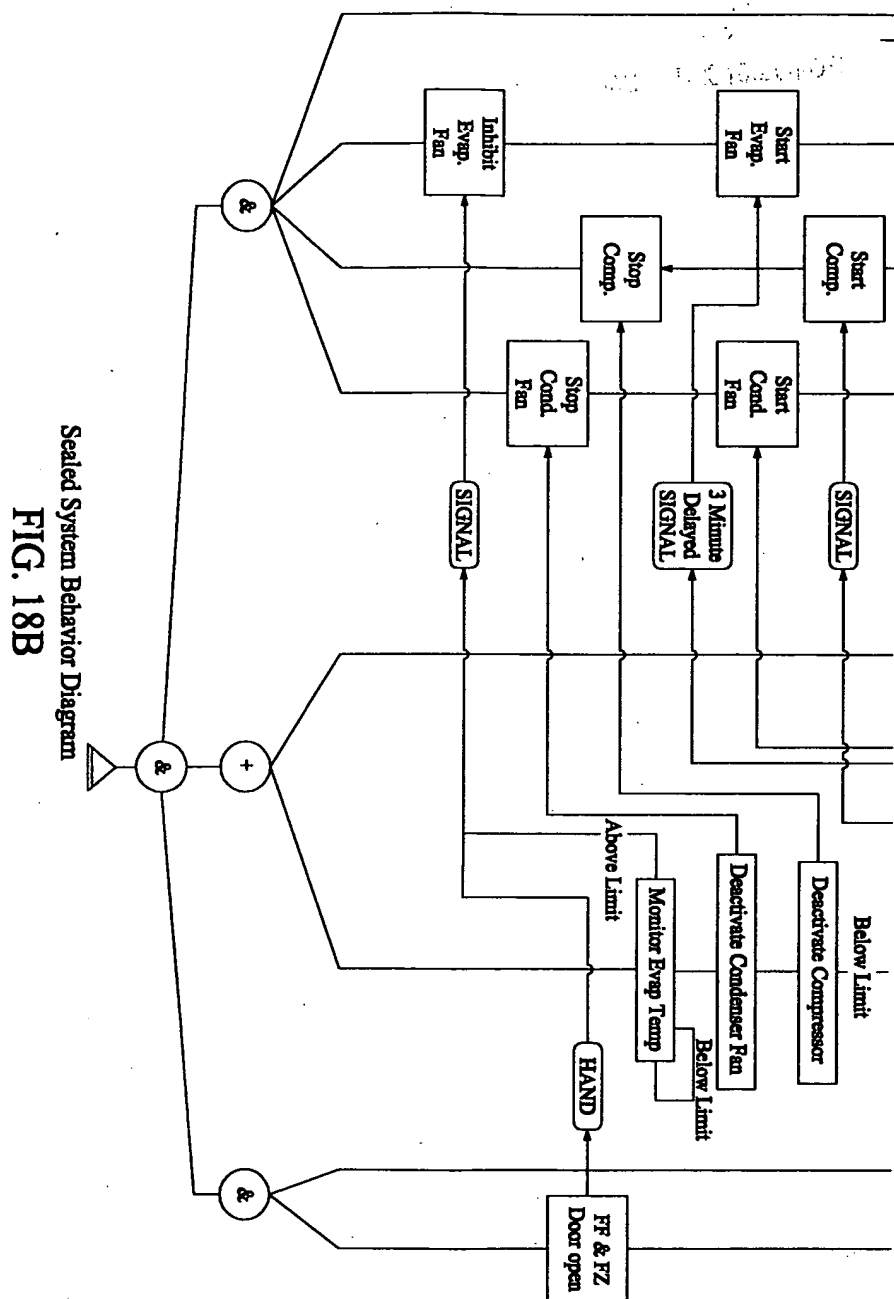
18/61



Sealed System Assumptions:

- No SS Failures
- No Sensor Failures

TO
FIG 18A



JAN 16 2003
PATENT & TRADEMARK OFFICE

21/61

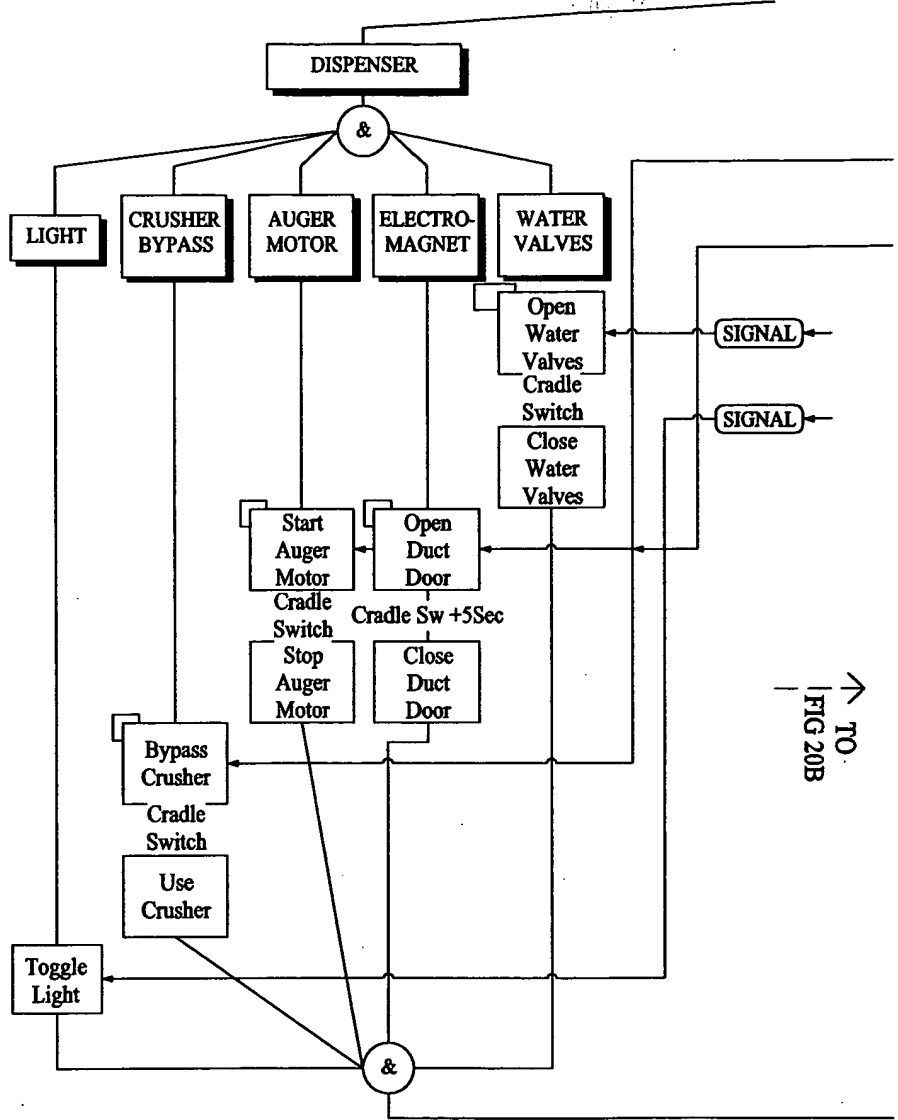


FIG. 20A

Dispenser Behavior

22/61

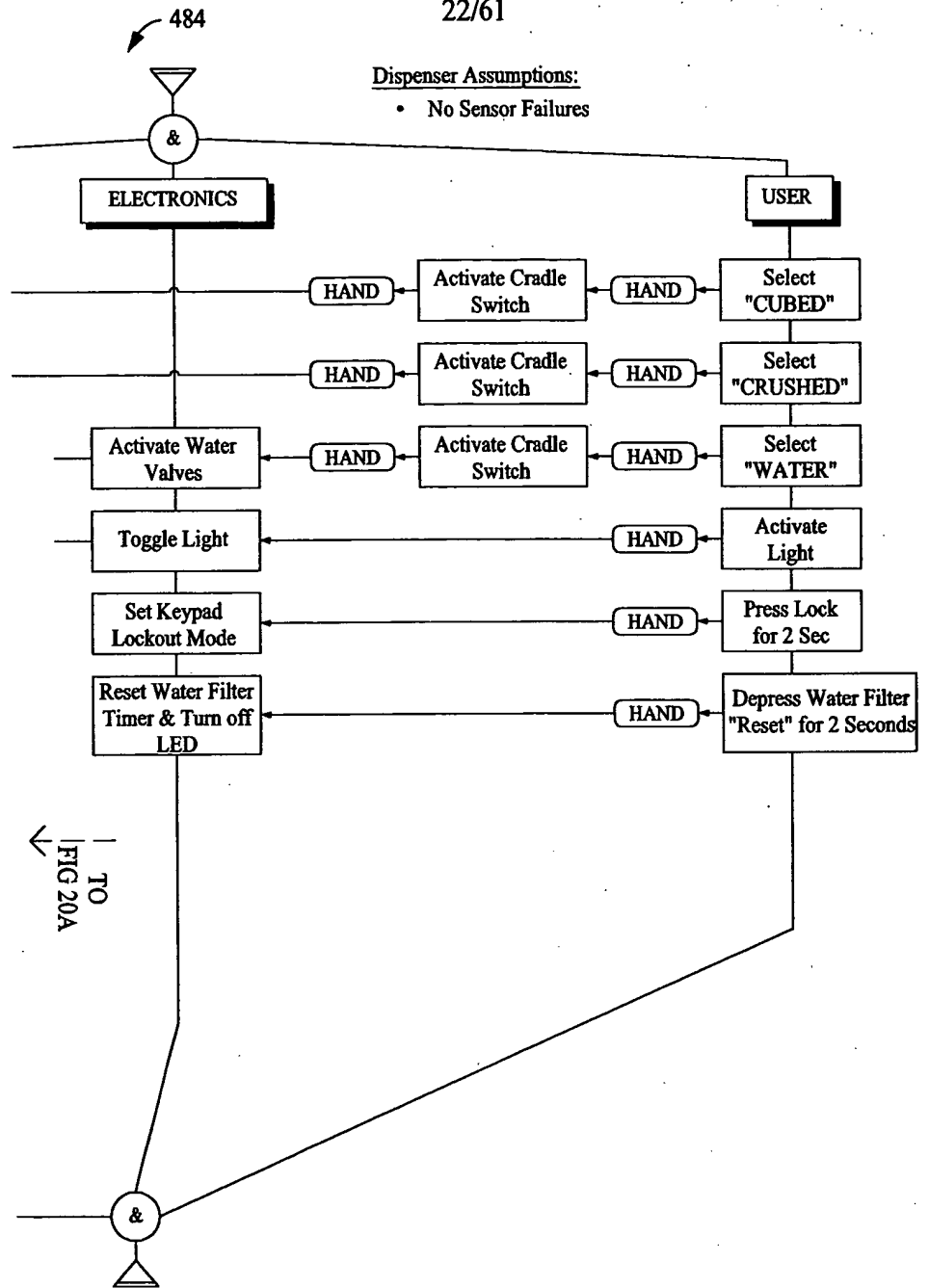
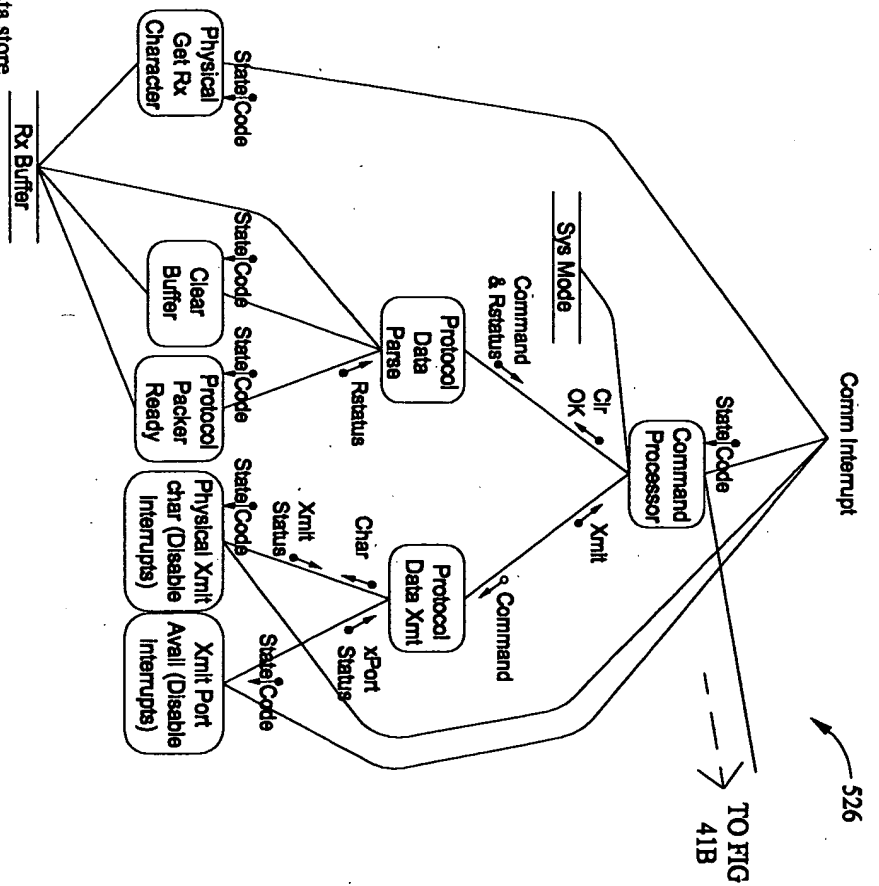


FIG. 20B

42/61



Note: Any Routine is allowed to read a data store
The command processor can read or write
any data store.
Dashed line indicates a path for initialization only

FIG. 41A

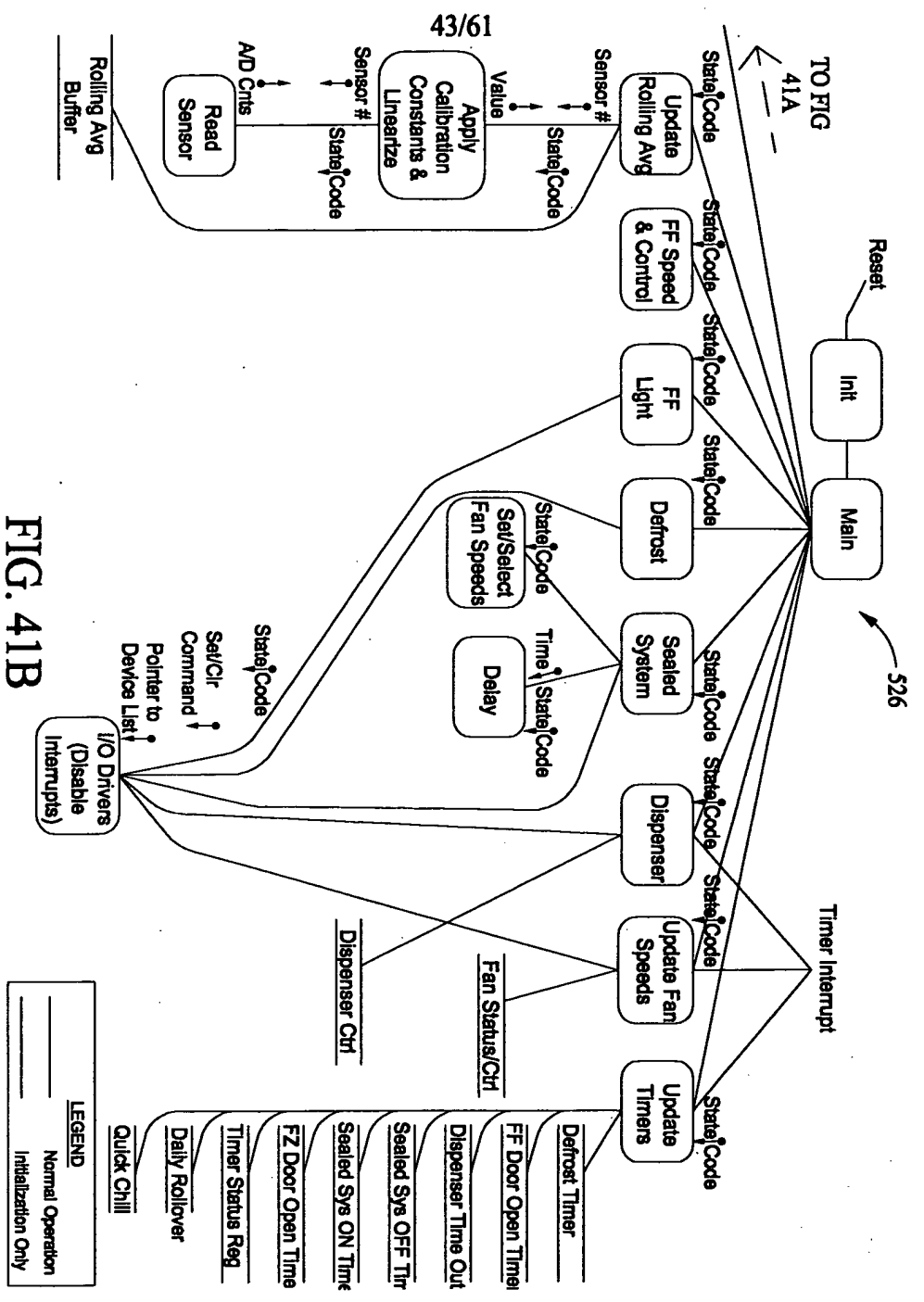
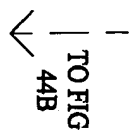


FIG. 41B



46/61

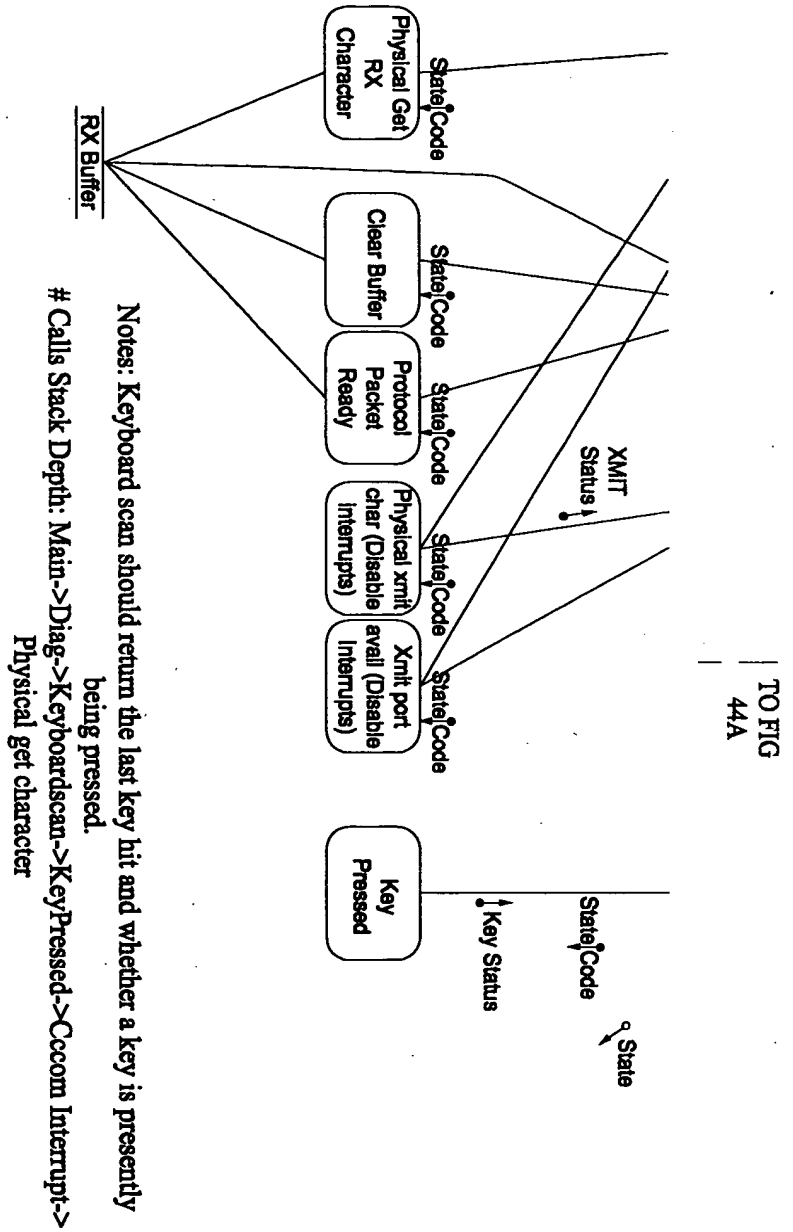
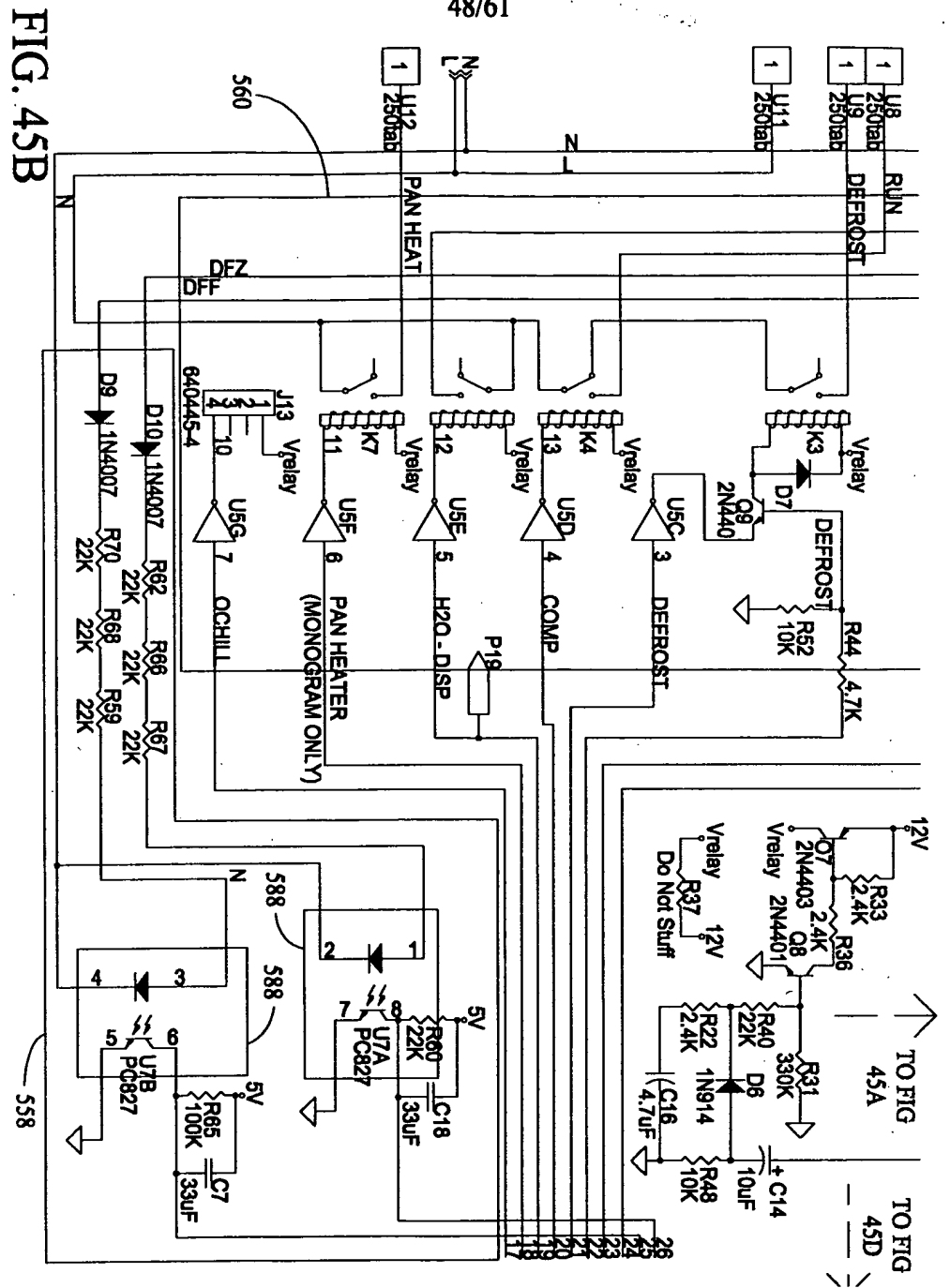


FIG. 44B



48/61



49/61

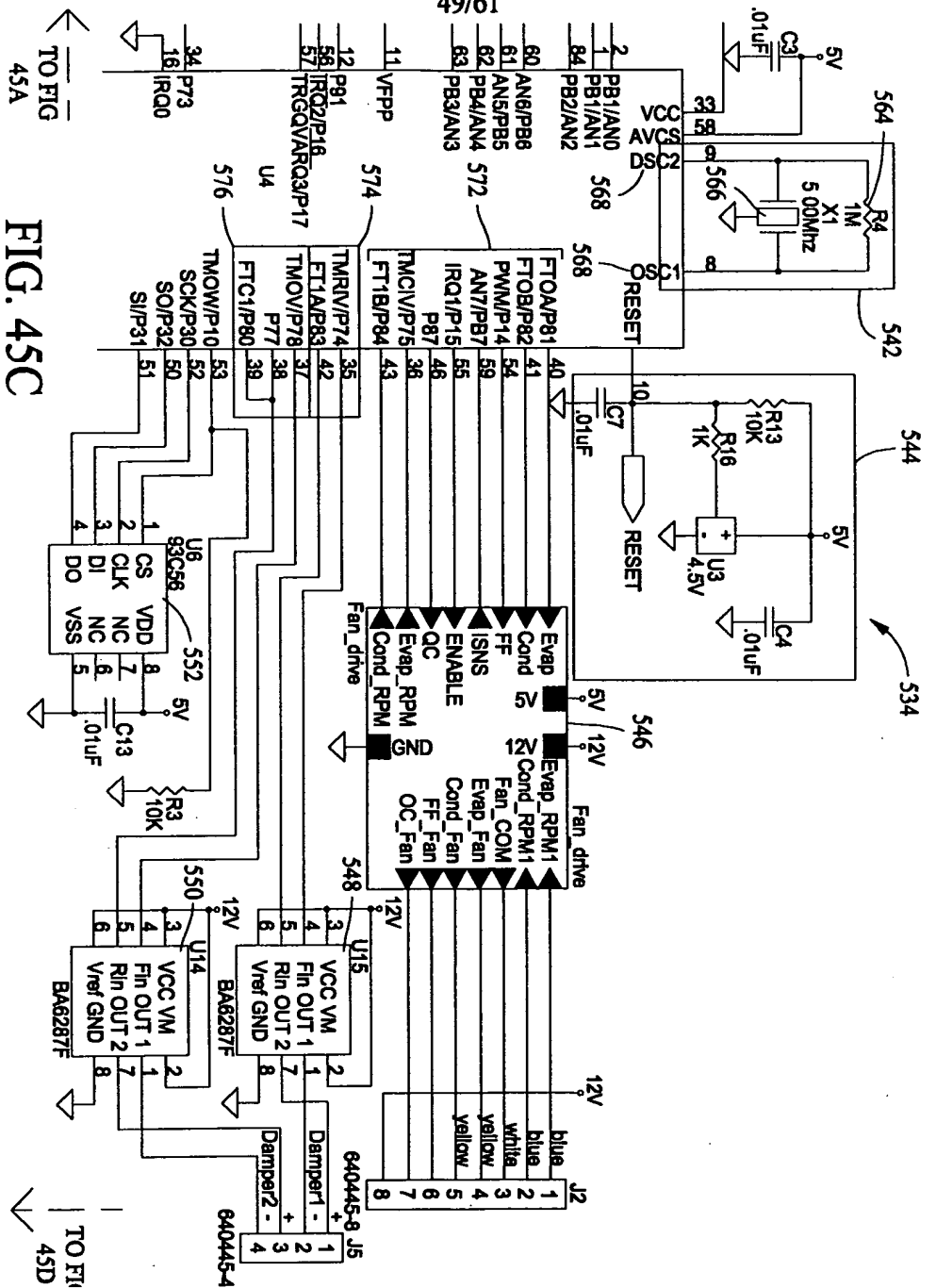


FIG. 45C

JAN 16 2003

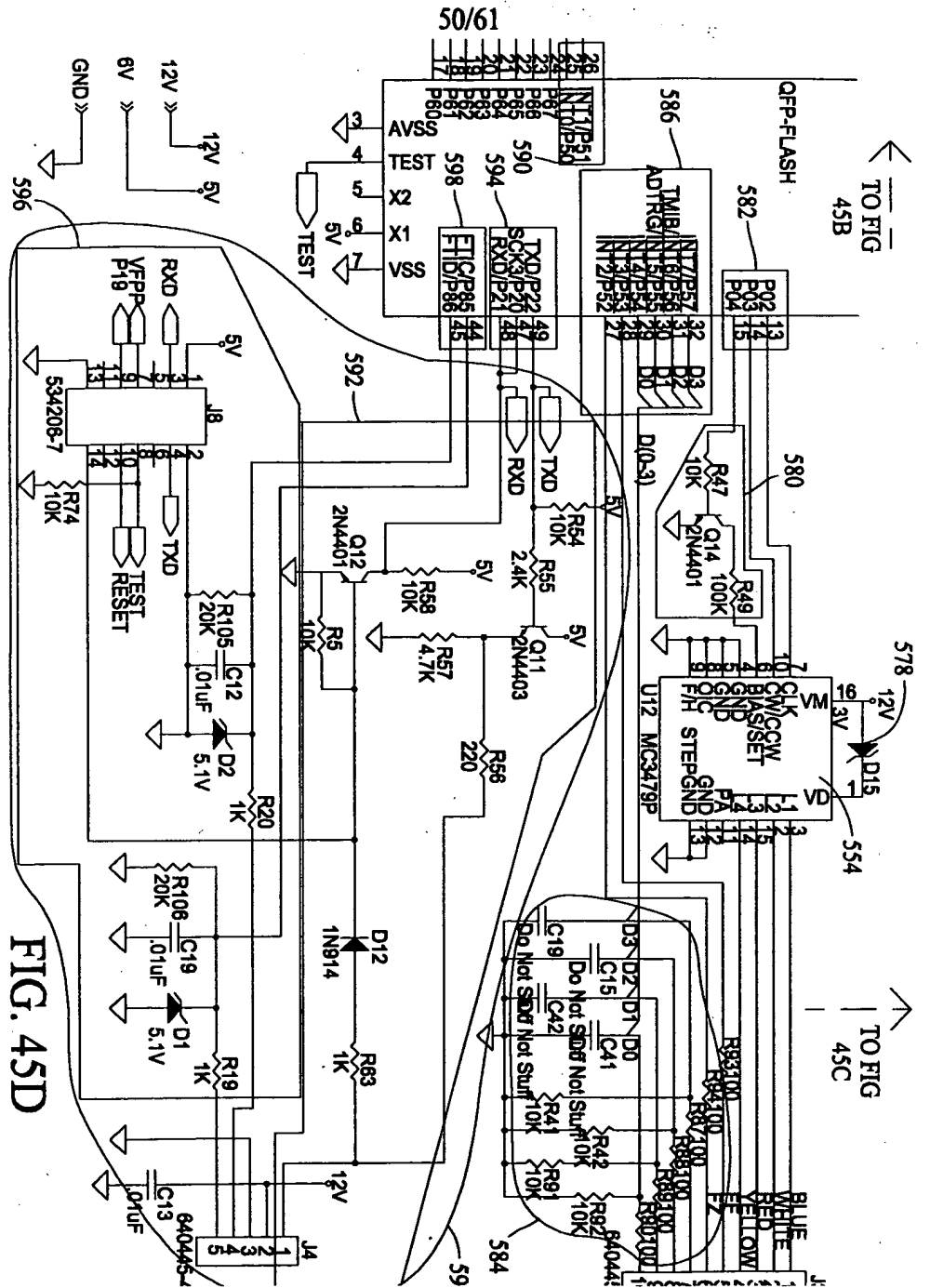


FIG. 45D

51/61

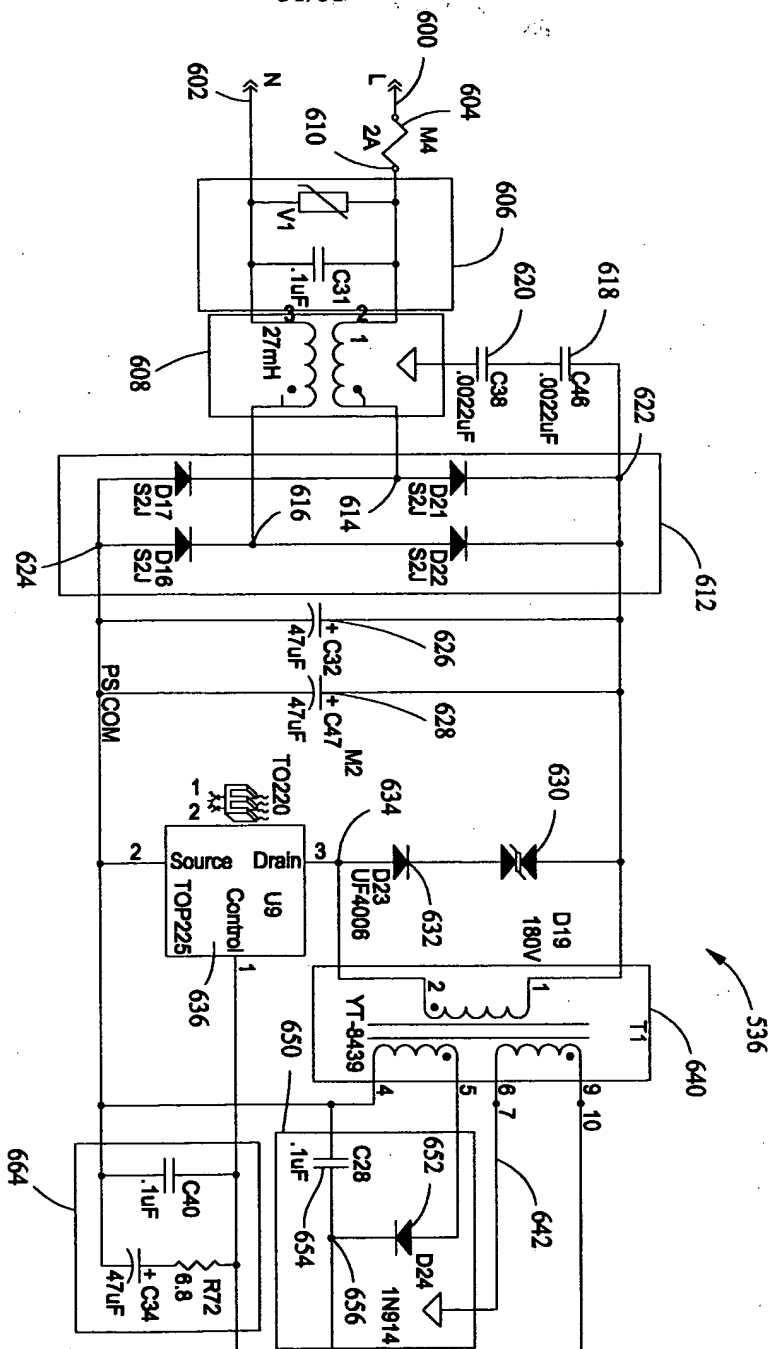
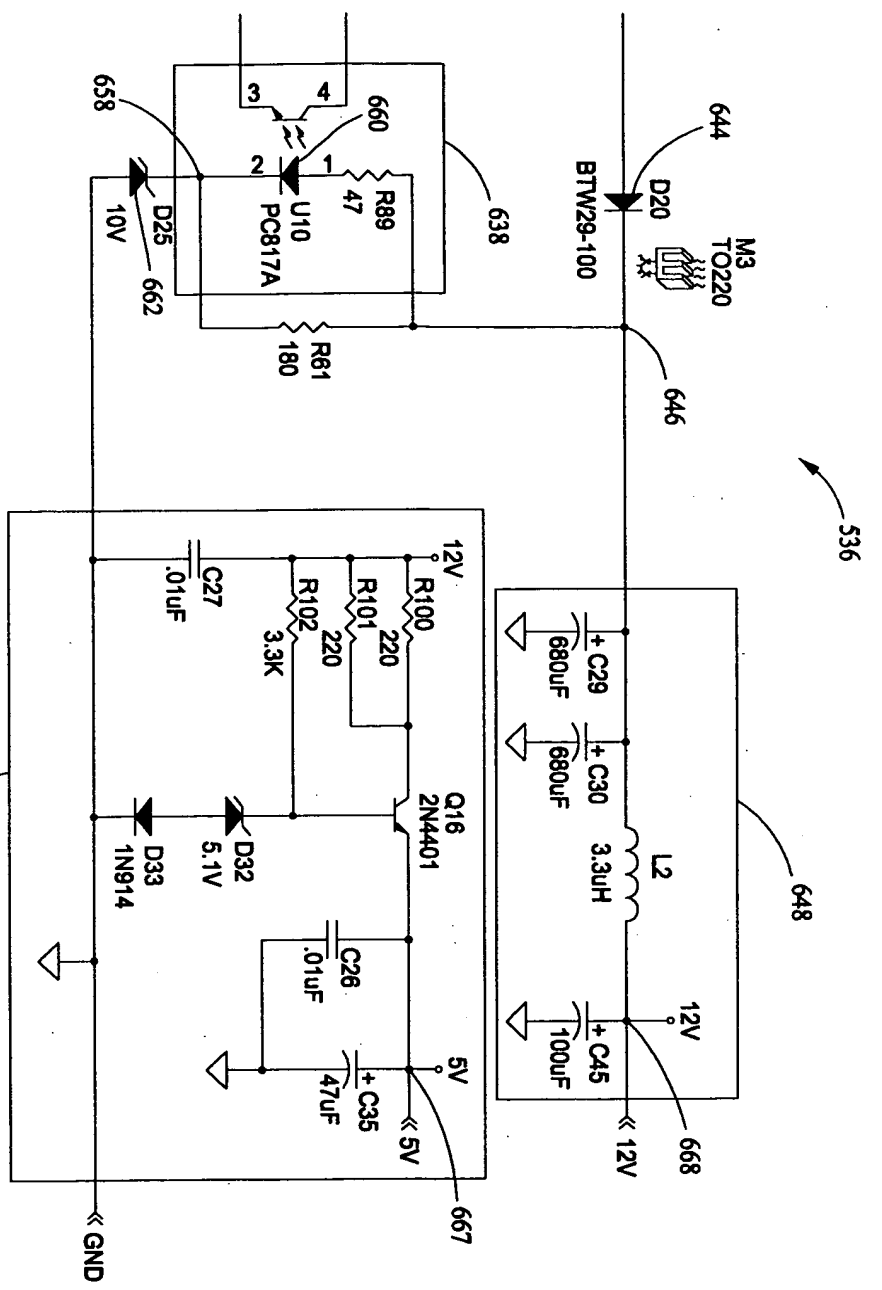


FIG. 45E

52/61

FIG. 45F



53/61
 JAN 16 2003
 TRADEMARK OFFICE

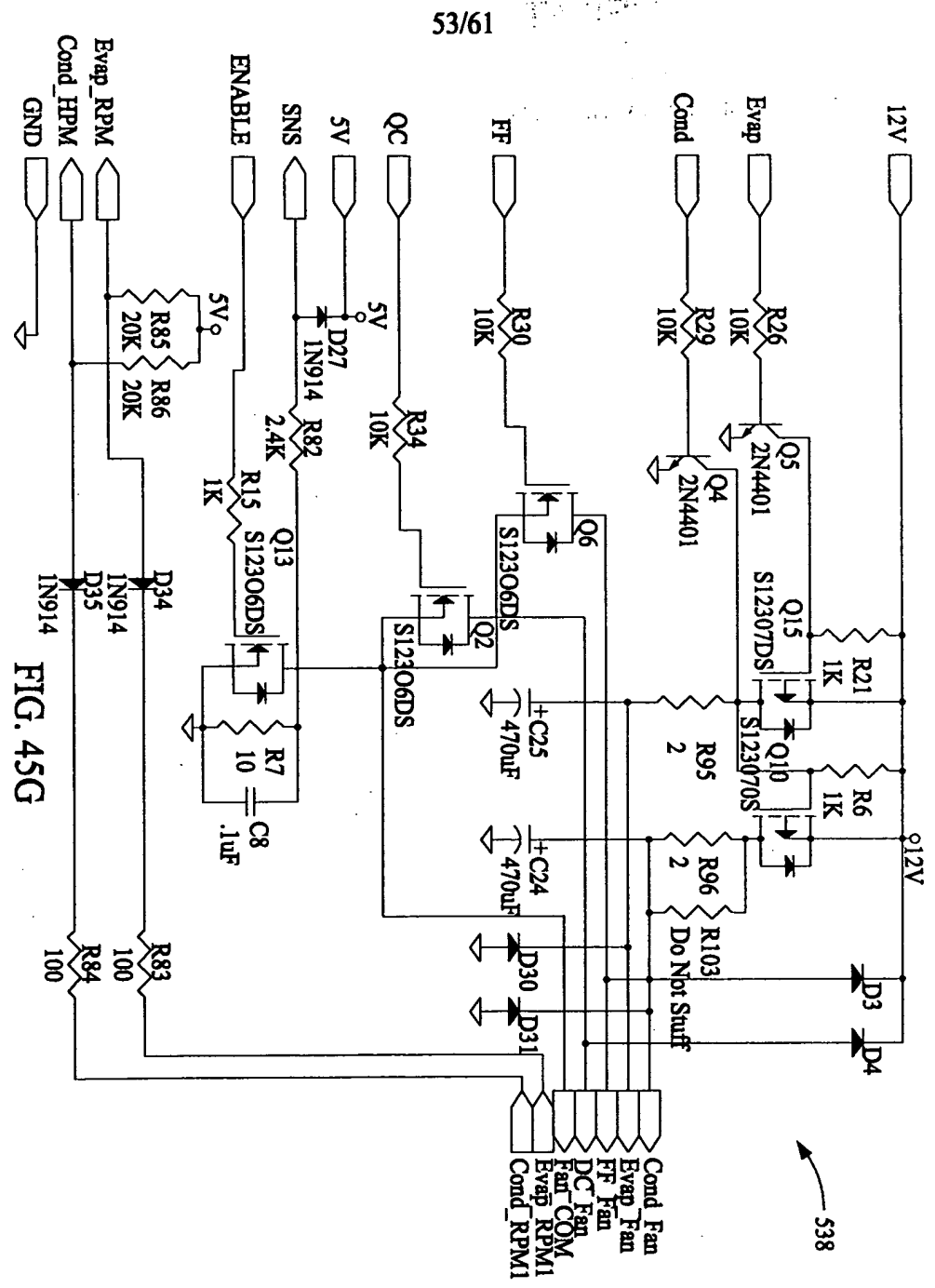


FIG. 45G

538

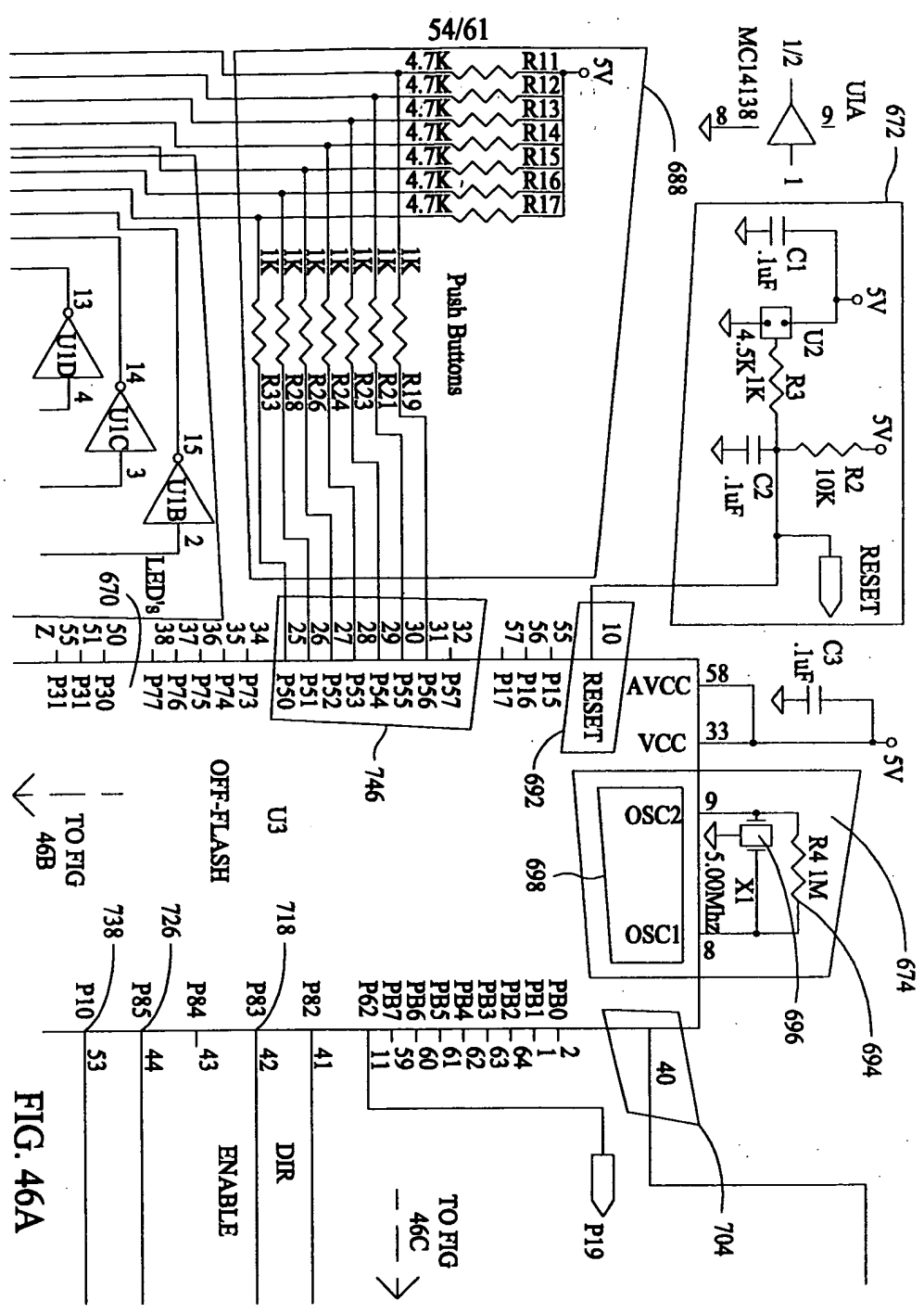


FIG. 46A

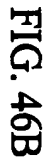
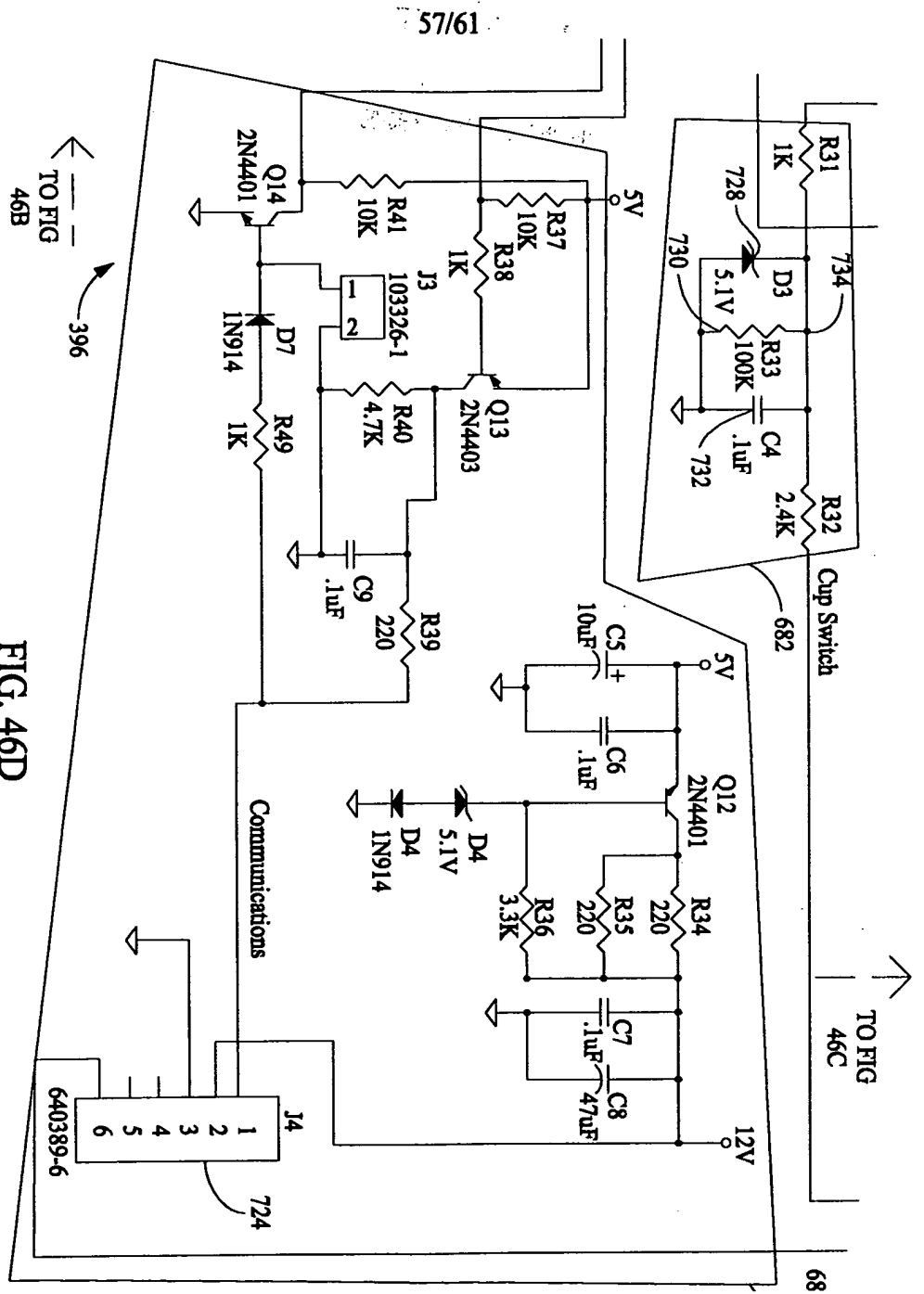




FIG. 46C

U.S. PATENT & TRADEMARK OFFICE
JAN 16 2003



58/61

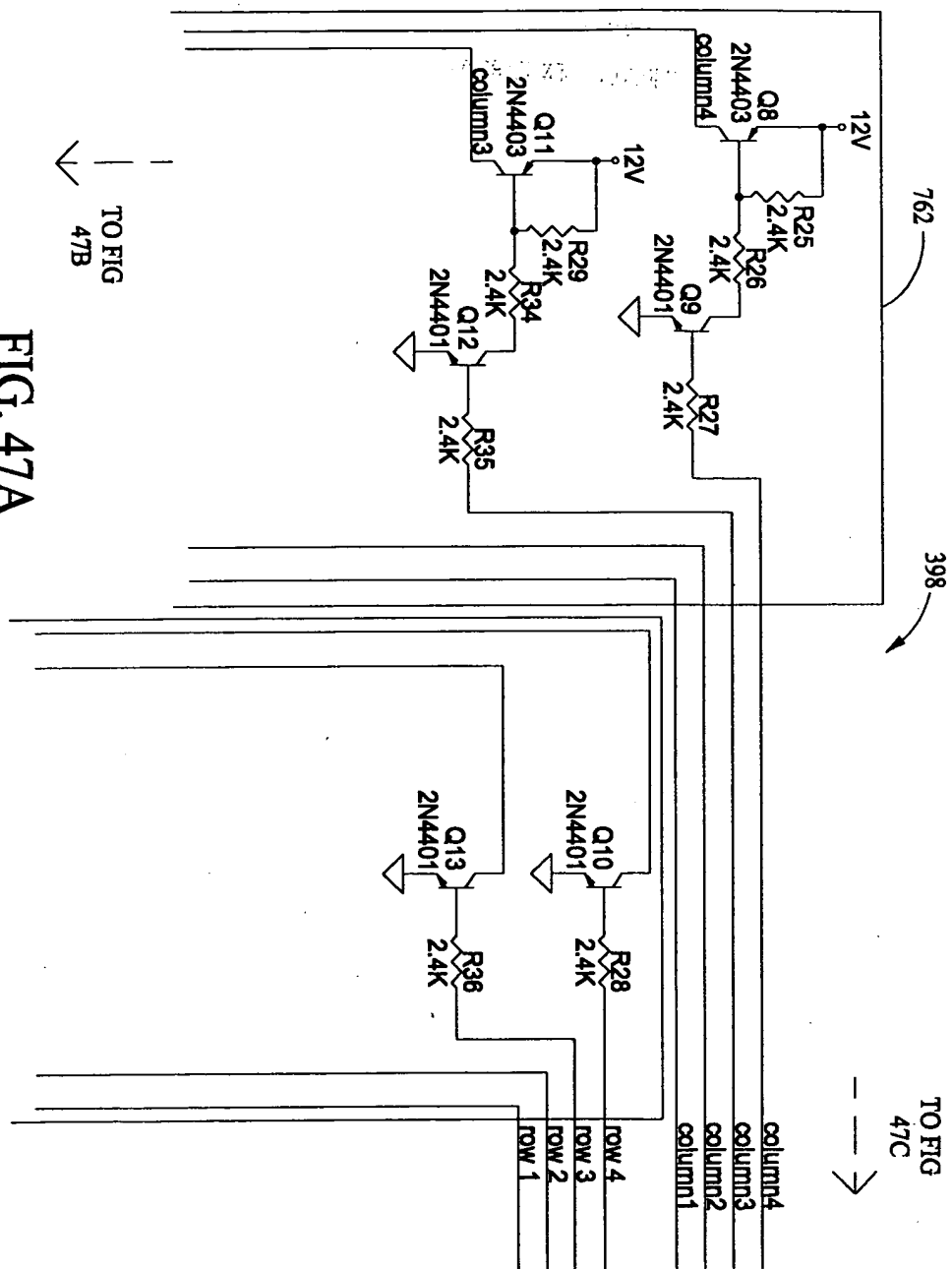


FIG. 47A

TO FIG
47B

TO FIG
47D

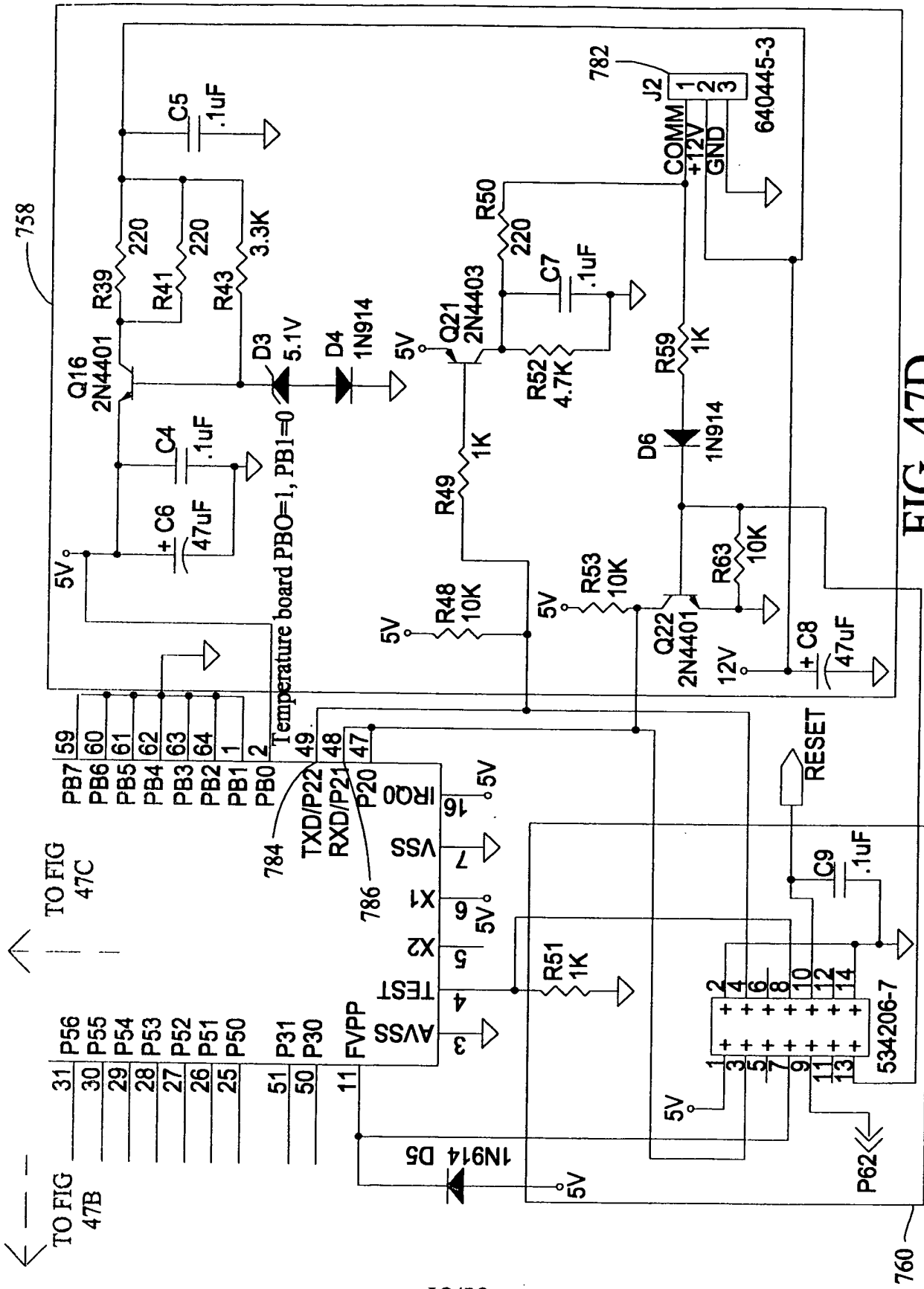
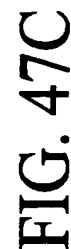


FIG. 47D



TO FIG
47D

19/09

TO FIG
47A